A SKETCH OF SCOTTISH INDUSTRIAL AND SOCIAL HISTORY

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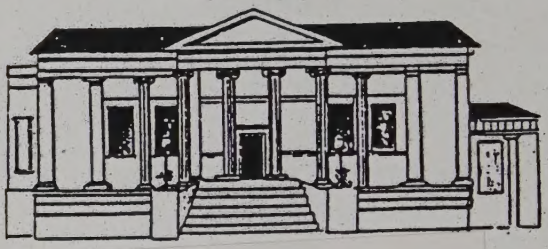

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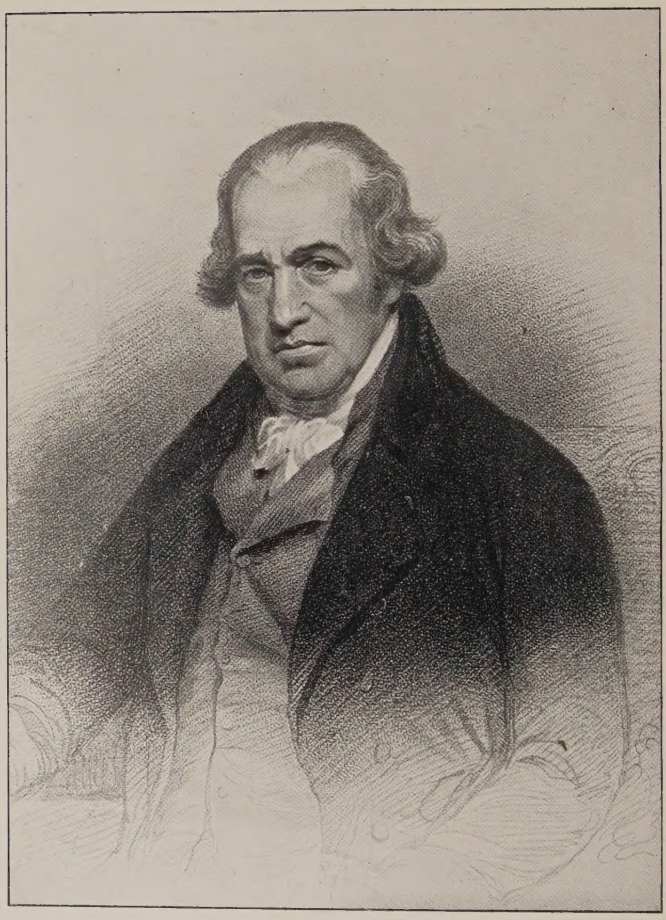

JAMES WATT

CHIEF IMPROVER OF THE STEAM-ENGINE

From an engraving after the painting by Sir Wm. Beechey

A Sketch of Scottish Industrial and Social History

In the 18th and 19th Centuries

BY

AMELIA HUTCHISON STIRLING

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PREFACE

The object of the following brief sketch, as is indicated in the title, is to trace out the social and industrial progress made by Scotland during the two hundred years since the union of her Parliament with that of England. It is perhaps unnecessary to say that the little book does not profess to give, within its narrow limits, an exhaustive or complete account of the subject with which it deals. It does, however, claim to have, however superficially, broken new ground, and to contain within its covers materials not hitherto brought together. Those materials have been gathered partly from contemporary authorities, and partly from the works of later writers. Among recent works to which the author desires to acknowledge indebtedness are the late Mr. Graham's *Social Life of Scotland in the 18th Century*, and (for the Introduction) Dr. Hume Brown's already classic *History of Scotland*, and Mr. Mathieson's careful and thorough account of *Scotland and the Union.*

Throughout the book, the writer has endeavoured to keep steadily within view three aims: (1) To omit no mention, however brief, of any Scottish person or event of *first importance*, whether in literature, art, manufacture, or commerce, belonging to the period dealt with; (2) to state everything as concisely as is consistent with clearness; and (3), so far as was possible in dealing with materials of such width and diversity, to knit the whole into a connected and continuous narrative.

In the Introduction, which was added to the book at the express request of the publishers, it has been sought to furnish the reader with a starting-point for the study of the period which is the special subject of the book, by giving an outline of the industrial progress of Scotland during the four centuries previous to the Union.

In conclusion, the writer would like to express the hope that the present slight sketch of a subject of so much magnitude and importance may be the forerunner of a more exhaustive treatment of it.

A. H. S.

EDINBURGH,
October, 1906.

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Scottish
Social and Industrial History

In the 18th and 19th Centuries

INTRODUCTION

When we speak of the history of a country, we generally mean the record of its wars and battles, of the reigns of its kings and queens, and of the Acts of its Parliaments. In that sense of the word, the history of Scotland, like that of England, ends at the point at which, in these pages, we begin—in 1707. It was in that year, as we know, that the Parliaments of England and Scotland were united, and that these two countries, so long the bitter foes of each other, became one nation — Great Britain. From that time onward, the record of the monarchs who have sat on the throne of the country, of the wars in which it has taken part, and the Acts which its Parliaments have passed, belongs to the history, not of England, or of Scotland, but of Great Britain.

Though, however, during the last two hundred

years, Scotland has ceased to be a separate nation, she has not been standing still. The rise and fall of kings, the victories and defeats of war, the success or failure of the various Acts of Parliament, are not the only, or even the most important, events which take place in a country. In the following pages we are going to see something of what the people of Scotland have been doing during the two centuries since they ceased to have a separate Parliament—of the commercial enterprises which they have started, the machinery which they have invented, the manufactures they have set up, the books they have written, the pictures they have painted, and the charitable institutions they have founded.

Before, however, beginning to trace out the industrial progress of Scotland during the last two hundred years, we shall first cast a brief glance at some of the chief causes and events which helped or hindered it during the previous history of the country.

The War of Independence

The series of events which all Scotsmen alike agree in regarding as the most important and the most glorious in the history of their country is that which occurred during the end of the thirteenth, and the first part of the fourteenth,

century. It was then, as we know, that the national heroes, Bruce and Wallace, by their warlike skill, endurance, and daring, taught their fellow-countrymen how to maintain their independence against a foe many times more numerous, and much more powerful, than themselves. There is no Scot who could wish that the war of independence had not been fought, in spite of the hardships and sufferings which it brought upon the people, and the waste and ruin with which it swept the country. If it brought suffering to the people, it also strengthened and ennobled their character as nothing else could have done. If it impoverished the country, it at the same time enriched its history with glorious records. Every Scot must feel that the memory of Bannockburn is worth all the hardships that were endured, all the blood that was spilt, in Scotland nearly six hundred years ago.

Nevertheless, the War of Independence, and the long feud with England, must be counted among the events which hindered the industrial progress of Scotland. When the whole strength and energy of the nation were engaged in a hard struggle for bare existence, it was impossible for the people to have time or thought to spare for commerce or manufactures. During the war, we are told, every one of the chief towns of Scotland was at some time or other set on fire,

either by the enemy, or by the inhabitants themselves to prevent it falling into the enemy's hands, while again and again the people laid waste their fields at the approach of an invading force. In such a state of things, of course, the land could not be cultivated as it ought to be, nor could fine buildings and noble cities be reared.

The Alliance with France

The quarrel with England, as we know, led the Scots in 1295 to form an alliance with France, which lasted for centuries. This alliance no doubt made an opening for Scottish trade and commerce. Throughout the centuries while it lasted, Scottish vessels sailed from time to time to the ports of France, with their homely cargoes of smoked and dried fish, and the skins of native animals, coming back laden with wines and other luxuries. Still, it must be admitted that, on the whole, the French alliance did more to hinder, than to help, the progress of Scotland. If it threw open French markets to Scottish commerce, at the same time, by keeping alive the enmity between the two neighbouring countries of Great Britain, it helped to rob Scotland of one thing which, in all countries and at all times, is necessary for industrial progress—namely, peace. It was the French alliance which, on more than one

occasion, induced the Scots to take part in a quarrel not their own, and which led to the greatest disaster in Scottish history — the battle of Flodden.

Marriage of James IV of Scotland and Margaret of England

An alliance more hopeful for the peace and prosperity of Scotland than that with France, was brought about in 1503 by the prudence and wisdom of Henry VII of England. England and Scotland, parts of one island, separated from each other by no great natural barrier of mountains, by no difference of language or of race, were the natural allies of each other. For generations the bitter feud between them had hampered the progress of both countries. It was impossible for the inhabitants of either, particularly those dwelling on the borders, to bestow the necessary attention on their trade, or the care of their fields, so long as they were in constant danger of inroads of armed invaders, pillaging and laying waste the land. With the hope of putting an end to the feud between the neighbouring countries, and securing a lasting peace, Henry VII succeeded in bringing about a marriage between his daughter Margaret, and the young king of Scotland, James IV.

The marriage was followed by a brief period of peace between the two countries, during which, we are told, Scotland was more prosperous than she had ever been before. The commerce with the Low Countries, which had been carried on by the Scots for generations, increased greatly; and many weavers and other handicraftsmen from Flanders settled in Scotland, and taught their arts to the people of the country. In 1507 a printing-press was set up for the first time in Scotland, while about the same period the "Great St. Michael", the largest ship at that time in the world, was built for the Scottish navy, which it was the dream of James IV to create.

This prosperous state of things, however, soon came to an end through the ambitious schemes of Henry VIII of England, and the Scottish alliance with France, which were the means of once more stirring up war between the two neighbouring nations, whose welfare depended on the existence of peace between them.

Accession of James VI of Scotland to the throne of England

Nevertheless the union of the two countries, which Henry VII had hoped to bring about by the marriage of his daughter with James IV, was not finally prevented, but only delayed. Just a

hundred years after the marriage, the crowns of Scotland and England were united on the head of the great-grandson of James IV and Margaret of England. It was through his descent from the daughter of Henry VII, that James VI of Scotland became by inheritance, in 1603, king of England.

The two neighbouring countries were now no longer at war with each other, as in the old days; and the people on both sides of the border were able to carry on the occupations of peace without the fear of a sudden inroad of armed men to lay waste their fields, and carry off the fruits of their toil. During the reign of James VI, Scotland carried on trade with Ireland, Holland, France, England, and the countries on the Baltic Sea; and much was done by the king and his council to encourage the manufactures of the country, manufactories of soap, glass, and leather being set up for the first time. A list of the Scottish exports of the period, however, shows that the Scots had not yet made great progress as a manufacturing nation. Their chief exports, we are told, consisted of fish, dried and salted, the skins of various animals, and coarse cloth, both woollen and linen, which, as a writer of the period states, was "narrow and shrank in the wetting".

Though England and Scotland were no longer

at war, they were still far from being at one with each other. The old feeling of rivalry and hostility between them could not at once be put an end to because it happened that the same king sat on the thrones of the two countries. In England, the unpopular character of the new king helped to strengthen the old dislike for the nation to which he belonged, while in Scotland, the loss both in dignity and in trade caused by the removal of king and court to London, increased the jealousy of the people for their wealthier neighbour.

James, who, in spite of his faults, was in many ways a prudent ruler, saw the importance of a closer union of his two kingdoms, and did what he could to bring it about. Soon after his accession to the English throne, he ordered the Parliaments of the two countries to take steps to establish a union between them; and in 1604 Commissioners were appointed to arrange the terms of a treaty. The feeling in both countries, however, was still too bitter to make a real union between them possible, the English in particular being indignant at the thought of the "rich pasture" of their country being invaded by "a herd of famished cattle", as they called the Scots; and the English Parliament, which met in 1607, refused to pass the measures recommended by the Commission. Amongst other things, the report

of the Commissioners to the Parliaments of the two countries had recommended that there should be free trade between them in all goods, except wool, cattle, hides, and linen; and though this proposal did not become an Act of Parliament, still it seems to have been pretty generally acted upon in practice. From 1604 onwards till 1660, the Scots seem to have enjoyed, to some extent at least, the advantage of free trade with England.

The Struggle between King and Church

In one of the means by which he sought to unite his two kingdoms—namely, by setting up in Scotland the form of church worship which was established in England — James was unfortunate.

By an enactment of the Scottish Parliament of 1592, Presbyterianism had become the established religion in Scotland. James, however, whose chief object throughout his reign was to increase his authority as king, believed that Episcopacy was the only form of worship suitable for a monarchy. He therefore never ceased to scheme until he had succeeded in establishing the Episcopalian form of worship in his northern kingdom.

James's son and successor, Charles I, sought

to carry on in Scotland the same policy with regard to the Church which his father had pursued. He was, however, a much less prudent man than his father, and attempted to order and command where James had been content to scheme and intrigue. His efforts to force the Scots to worship in the form and with the liturgy which he prescribed roused against him the indignation of the greater number of his Scottish subjects, and led them, in 1638, to bind themselves together under a "National League and Covenant" to resist what they regarded as the tyranny of the king. From that time onward to near the end of the seventeenth century, the chief events in the history of Scotland are the risings and persecution of the "Covenanters", as the Scottish Presbyterians were called, during the reigns of Charles's sons and successors, Charles II and James VII. Those kings believed in the Divine Right of kings to impose their wills on the consciences of their subjects; and the Covenanters preferred to suffer persecution and even death rather than admit such a right.

The long religious struggle between king and people must be admitted to have been very unfavourable to the industrial progress of Scotland. While it lasted, trade and commerce no doubt continued to be carried on. However our minds

may be occupied, our bodies must be fed and clothed, the necessaries of daily life must be bought and sold. So long, however, as the mass of the people in Scotland were engaged in a struggle, which absorbed their deepest thought and feeling, they could only have a divided attention to give to trade and commerce.

Cromwell and Scottish Trade

Between the reign of Charles I and that of his son, Charles II, there was a period of a few years during which events occurred which were very favourable to the industrial progress of Scotland. After the execution of Charles I by the decree of the English Parliament in 1649, the Scots upheld the cause of his son against the Commonwealth, as the new government in England was called, until they were defeated by the forces of the Commonwealth, under its great general, Cromwell, first at Dunbar, and, a year later, at Worcester.

After the defeat of the Scots, the English Parliament resolved on the union of England and Scotland, and a Bill of Union was drawn up, which, however, was not passed when, in 1653, Cromwell dissolved the Parliament. He was, however, anxious to secure the union of the two countries; and when, in the following year

(1654), he became Protector of England, one of his first cares was to have an "Ordinance of Union" prepared. By this Ordinance, which became an Act of Parliament in 1657, England and Scotland were to become one Commonwealth; thirty Scottish members were to take their seats in the English House of Commons, and—what chiefly concerns us here—there was to be freedom of trade between the two countries. During the Protectorate of Cromwell, which, unfortunately for Scotland, lasted only some four years, Scottish goods were permitted to pass into England, or any of the dominions of England, as free of duty as English goods themselves. Nothing could have been more likely to rouse the commercial energy of the people of Scotland than the throwing open to their trade of a large new market; and during the Protectorate Scottish trade and commerce made a great advance. A historian of the period, describing the state of Scotland between 1652 and 1660, says, "we always reckon those eight years of usurpation a time of great peace and prosperity".

The Navigation Act and Scottish Trade

This prosperous state of things, however, was put an end to in 1660 by the restoration of Charles II to the thrones of England and Scot-

land. The religious struggle, which, as we saw above, continued throughout the reigns of Charles and his brother, James VII, was not the only cause of injury to Scottish trade during the period. The Union between the Parliaments of the two countries, which Cromwell had brought about, was at once dissolved; and the Scots were deprived of the right of free trade in England, which they had to some extent enjoyed since the accession of James VI to the English throne, and which had been secured to them by the Act of Union of Cromwell's Parliament. The celebrated Navigation Act, passed by the English Parliament in 1660, caused great injury to the Scottish shipping trade. It excluded Scottish vessels, as well as those of foreign countries, from the right of carrying goods to English ports from Asia, Africa, America, or the countries of Europe.

While with respect to trade the Scots were treated by the English as foreigners, they had to side with England in all her quarrels with foreign countries, whether they wished to do so or not. Since the Union of the Crowns of the two countries, Scotland had ceased to have independent relations with foreign powers. She could not, as in the old days, carry on trade with a country with which England was at war. The foes of England were now the foes of Scotland. When, in 1664, war broke out between England

and Holland, it put an end for a while to the most important branch of Scottish commerce — the trade with the Dutch. Thus almost in every way the Restoration proved injurious to Scottish trade. It renewed religious persecution in the country; it deprived Scottish merchants of the right of free trade in England; and it put a stop, at least for a time, to their trade with Holland.

That, in spite of such obstacles, there was any industrial progress whatever made in the country during this period, is a proof that the Scots were beginning to wake up to a sense of the importance of commerce and manufactures, after a long stretch of years during which questions of religion had taken up the greater part of their attention. This awakening interest in manufactures is shown by various Acts passed by the Scottish Parliament for the encouragement of the industries of the country. One curious statute, passed in 1686 for the encouragement of the linen trade, is worth mentioning. It enacted that no corpse was to be buried in the country in a covering of anything but linen!

The Revolution Settlement

The Revolution of 1689, by which James VII was deposed from the thrones of England and Scotland in favour of his daughter Mary, and her husband, William of Orange, greatly favoured the

industrial progress of Scotland by putting an end to religious persecution in the country. William III, unlike his immediate predecessor on the Scottish throne, was a wise and broad-minded man; and never would have thought of attempting to force his subjects to adopt a form of worship to which he knew them to be opposed. He instructed those who had the difficult task of settling the church question in Scotland to consider above everything what was "agreeable to the inclination of the people". Presbyterianism being apparently agreeable to the greater number of the people, it became once more, by an Act of Parliament, the established religion of the country.

No sooner was the question of church government settled, than the Scottish Parliament turned its attention to the encouragement of manufactures and commerce. In 1693 several statutes were passed conferring on various companies the right to set up manufactories of linen or woollen cloth, while the privilege of setting up the first coach-work in Scotland was conferred, the same year, on a cabinet-maker named Scott. It was in 1693, too, that the "Act for the Encouragement of Foreign Trade" was passed, of the consequences of which we shall see something further on.

Two years later, the foundation of the Bank of Scotland marked an important step forward in

the commercial development of Scotland; and in 1696 we learn that many articles—such as cordage, glass, gilded leather, pins, ribands, cambrics, paper, &c. — which used to be brought from abroad, had begun to be made in the country.

During the first ten or twelve years following the Revolution it seemed as if the restless energy of the people of Scotland, no longer taken up with a struggle for national existence, or with religious strife, were seeking an outlet in commerce and manufactures. It was perhaps especially in Glasgow that the awakening of a spirit of industrial enterprise showed itself at this time. There were many applications to Parliament from Glasgow merchants for power to form companies for the manufacture of goods of various sorts. In the year 1699 we read of an important company being formed for the manufacture of woollen goods, by which they hoped that a "vast sum of money would be kept within the kingdom". In the same year, another company brought to Glasgow English workmen skilled in the manufacture of hardware—that is, such things as pins, needles, scissors, knives, scythes, &c.—and set up a hardware factory, while two years later a soap-work and a glass-work were set up in the same town.

In their efforts to become a commercial and manufacturing nation, however, the Scots were very much hampered by the smallness and poverty

of their country, and by the commercial jealousy of their southern neighbours. Though Scotch and English were subjects of the same sovereigns, the Scots were still treated in England, with regard to trade, as foreigners—as they had been since the Restoration — a heavy duty being imposed on Scottish goods on entering England. The growing commercial ambition of the Scots, and the commercial jealousy of the English, led to one of the greatest disasters that ever befell Scottish trade.

The Darien Scheme

Though Scotsmen, as individuals, had always shown a love of travel and adventure, and had pushed their way to the front in almost every country in the world, yet Scotland possessed no colonies, and no great companies formed for foreign trade. England, on the other hand, had colonies in America, which, by the end of the seventeenth century, afforded quite an important market for her manufactures, and the English East India Company, founded about a century earlier, was carrying on a large and prosperous trade. Both from America and India Scottish merchants were jealously excluded by the English trade laws. No doubt, in spite of these laws, some Scottish merchants were clever enough to smuggle goods into, or out of, Indian or American

ports; but such a secret trade, besides being dangerous and irregular, did not satisfy the growing ambition of the Scottish nation to enrich herself by a great foreign trade.

It was this growing ambition which, in 1693, led to the passing of the "Act for the Encouragement of Foreign Trade", which has been mentioned above. Two years later, another Act of the Scottish Parliament conferred on some twenty-one men the right to call themselves "The Company of Scotland trading to Africa and the Indies", to plant colonies, and even to raise troops and make war. The moving spirit in the formation of this company seems to have been a Scotsman named William Paterson, who is remembered as the founder of the Bank of England. The first intention was to establish a trade between Scotland and India; and in a short time no less than £300,000 was subscribed for shares in the company in London alone. In consequence, however, of the complaints of the English East India Companies (of which there were two at the time), the House of Commons prevented the Scottish company from carrying out their intention by ordering their books to be seized.

It was no doubt at the suggestion of William Paterson that the scheme was now adopted to found a Scottish colony on the Isthmus of Darien, or Panama—the neck of land which joins North

and South America. The position of the Isthmus, washed as it is by two oceans, and connecting two great continents, seemed to point it out as a suitable centre for the trade of the world. The ambition of the Scots was kindled by the thought of becoming the founders of a great world-centre of trade; and they shut their eyes to obstacles. The Company's shares were eagerly bought up by every class of the people; and in July, 1698, an expedition, consisting of three small vessels, built at Hamburg and Amsterdam, set sail from Leith, with 1200 souls on board, all dreaming, no doubt, of the fortunes which they were going to make in the new country.

Not fortunes, however, but *mis*fortunes awaited the unhappy colonists. On their arrival they found an unhealthy climate, for which the goods they had brought to trade with—chiefly woollen cloth, "blue bonnets", and periwigs! — were utterly unsuitable. Their supply of provisions was insufficient, and they were surrounded, though at the distance of many miles, by important settlements of Spaniards, by whom they were considered as invaders. King William, so far from being at war with Spain, was anxious, for important reasons, to keep on friendly terms with that country. When, therefore, the King of Spain complained of the Scotch colony as an invasion of his territory, William was forced to disown the

expedition, and the unfortunate colonists were treated as mere freebooters, under the protection of no country. Attacked by sickness and want, they abandoned the miserable settlement after a wretched stay of about seven months; but not soon enough to prevent two later expeditions from setting out, to meet no better luck than the first.

The scheme of the Company was a miserable failure. It not only brought ruin to many poor people in Scotland, who had embarked their slender savings in its shares, but it checked the growing commercial enterprise of the country for many years afterwards.

The Union of the Two Parliaments

One good result, however, the unfortunate Darien Expedition undoubtedly had — it helped to hasten on the Union of the Parliaments of Scotland and England. For nearly a century the two countries, while under a common sovereign, had been separate in almost every other respect. During that period, wise men in both countries had seen the importance of a closer union between them; and attempts had been made at different times to bring it about. We have already seen something of the well-meant, though not well-directed, efforts of James VI to unite his

two kingdoms; and we have seen, too, how, under Cromwell, a union of the two parliaments had actually taken place, which, however, only lasted for a few years. In 1670, and again at the time of the Revolution in 1689, the question of union was debated, and steps were taken towards that end, which, however, was not accomplished at the time of the Darien Expedition.

The obstacles to union, besides the old feeling of enmity between the two nations, which had grown up during the centuries in which they had been at feud with each other, were perhaps chiefly two. On the side of the English, the main obstacle was a jealous unwillingness to share their trade with a people too poor to be able to give them much in return; on the side of the Scots, it was fear for the safety of the national Church. Besides this, of course, Scottish pride rebelled at the thought of ceasing to be a separate nation, and becoming merely a part of a larger kingdom.

The failure of the Darien Expedition proved to all, or nearly all, the people of Scotland that it was necessary that there should be either complete union or complete separation between the two countries — either one parliament, or two sovereigns. Regardless of the fact that the expedition had been badly mismanaged, they laid the entire blame of its failure on the relations between the two countries. Had there existed

a complete union between them, the Scots would have had a share in the Indian trade of England, and the ill-fated expedition need never have taken place, or if it had taken place, would have had the support of England. On the other hand, they thought, had Scotland been entirely separate, she would have possessed a navy of her own with which to protect her commercial enterprises.

William III, "the only Scottish sovereign since the Reformation", as has been said, "who had governed the country in an entirely reasonable spirit", was always desirous of the union; and on his death-bed sent a message to the House of Commons, in which he expressed a wish that some means might be found to make "both kingdoms one". Though only a few months after his death, however, commissioners were appointed, on the recommendation of his successor, Queen Anne, to treat for a union, it was not till five years later that the wish of the dying king was realized.

Four years before the Union actually took place, the Scottish Parliament had embodied its resolution in favour of complete union and equality with England, or complete separation, in the famous Act of Security, passed in 1703. The substance of the Act was that, on the death of Queen Anne without heirs, the same sovereign should not rule in Scotland as in England, unless

the safety of the Scottish Church, and the rights of the Scots to free trade with England, were secured. It further provided for the arming and drilling of Protestants all over the country.

It was this Act which forced the English Parliament to see that union with Scotland had become a necessity. England was at the time engaged in a great war with France (the War of the Spanish Succession), and she dared not risk the danger of having an armed and independent nation on her borders. In 1706 commissioners representing the two countries met to settle the terms of union.

Even after the treaty was drawn up, however, the Union was opposed by a large number of people in Scotland, amongst whom the old dislike for the English had been strengthened by the events connected with the Darien Expedition. At length, in January, 1707, the Scottish Parliament passed the Act which put an end to its own existence; and on the 1st of May, Queen Anne drove in state through the City of London to St. Paul's Cathedral, where a thanksgiving service was held to celebrate the formation of the two countries, so long hostile to each other, into the United Kingdom of Great Britain.

Terms of the Union

In spite of the opposition which the Act of Union met with in Scotland, it must be admitted that its terms were not unfair or unfavourable to that country. In the new Parliament of Great Britain, Scotland was to be represented by sixteen peers and forty-five commoners. The safety of the Presbyterian form of worship, for which the Scots had suffered so much persecution in the reigns of Charles II and James II, was secured by a special article. Scotland was to continue to have her own laws and her own law-courts, her own universities and system of schools; and she was to enjoy the right of free trade in England and in the colonies of England.

On the other hand, she was to pay her share of the taxes of the United Kingdom, which were much heavier than those which had been imposed by the Scottish Parliament. To make up for the additional burden of taxation, however, the English were to pay over to Scotland the sum of nearly four hundred thousand pounds, which was known as "the Equivalent", and was to be used —a portion of it at least—in making up to the Darien Company what they had lost.

In spite of the reasonableness of its terms, the Act of Union was regarded by many people in Scotland with bitter hatred as a mere contract

for the sale of the independence of their country. While it was passing through Parliament, riots took place in the streets both of Edinburgh and Glasgow. The Duke of Queensberry, who acted as commissioner, or representative of the sovereign in Parliament, was cursed and hooted, and, on one occasion at least, pelted with stones by the mob; and Daniel Defoe, the author of *Robinson Crusoe*, who had come to Edinburgh to try to win over the popular favour for the Union, was violently abused, and even threatened with assassination.

Even when the Act had passed, the angry excitement of the populace did not at once subside. Some delay which occurred in the arrival of the Equivalent from England gave rise to rumours that the Scots were about to be cheated out of the money, for which, as those opposed to the Union declared, they had sold the independence of their country; and indignant outcries were heard against the bad faith of England. When at length the Equivalent money did arrive, in twelve wagons, drawn by horses, and guarded by a party of soldiers, the mob hooted and cursed the little train, and pelted the carters and horses with mud and stones.

It is impossible for any parliament to pass any measure which shall give satisfaction to every individual affected by it. It was impossible that

an Act so far-reaching as that by which England and Scotland were made one nation, however carefully drawn up, should involve no injury of any sort to any class or person in either country. Some loss, no doubt, as well as gain, the Union brought to Scotland. We are here dealing, however, only with the history of the trade and industry of the country; and the following pages will show that, to these, the Union proved, in the end, if not just at first, a great boon. For a people of so much intelligence and energy, the Scots, it must be admitted, had, up to 1707, made no great progress as a manufacturing and commercial nation. The causes of this backwardness have been indicated in the foregoing pages, but may be briefly stated here. They were chiefly four:—(1) The smallness and poverty of the country; (2) the long feud with a larger and more powerful neighbour; (3) the long religious struggle during the seventeenth century; and (4) the fact that, since the Union of the Crowns, Scotland, while excluded from a free share in the trade of England, was practically unable to make independent relations with foreign powers. The Union of 1707 gave to the commercial talents of the Scots the only fair chance they had had for centuries, except during the brief period of Cromwell's Protectorate. In the following pages we shall see what use they made of it.

CHAPTER I

SCOTLAND AT THE BEGINNING OF THE PERIOD

Perhaps there is no period of the same length in the history of Scotland which has seen such striking changes in the manners and customs of the people, such remarkable progress in agriculture, trade, manufactures, and the arts, as the last two hundred years. At the beginning of the eighteenth century, Scotland was a miserably poor country; its soil ill-cultivated and unproductive, its towns, according to modern ideas, few and small, its manufactures rude and unimportant, its trade insignificant. Almost the only manufactures were those of linen and coarse woollen materials, the yarn of which was spun by the women in their homes, and afterwards woven on hand-looms by village weavers.

In place of the thousands of fine steam-ships, which sail nowadays from Glasgow, Leith, Dundee, and Aberdeen, to almost every country of the world, a mere handful of small sailing vessels carried on a poor trade between the ports on the east coast of Scotland and those of Holland, Germany, France, and Norway. The exports

were chiefly coarse woollen homespuns, stockings knitted by the women of Aberdeenshire and the north-eastern counties, dried fish, tarred ropes, oats and barley. The imports included timber from Norway, wines, brandy, and other luxuries from France, knives, scissors, and other hardware from England and Holland, and earthenware from Holland and France.

In the Introduction we have seen something of the causes which, for centuries, had hindered the progress of Scotland in commerce and manufactures. We have seen, too, how, when the Revolution settlement had put an end to the struggle which, for many years, had been going on between the king and his Presbyterian subjects, there awoke among the people of the country an active spirit of industrial enterprise. Unfortunately that spirit was checked almost at once by the failure of the Darien expedition—the first attempt of the Scots to found a commercial colony of their own. The gloom, which undoubtedly hung over the opening of the eighteenth century in Scotland, was largely due to the failure of that ill-fated venture, by which hundreds of Scottish people were ruined, and the progress of commerce was retarded for many years.

Another cause of the gloom and poverty of Scotland at the beginning of the eighteenth

century was the succession of seven years, beginning in 1696, and long remembered as "King William's lean, or hungry, years". During those years, the crops, unripened by summer sun, were blighted by early frosts, and famine spread over the land. Cattle perished in thousands; men and women had to hunt, and even fight, for their food; and so many died from starvation that it was sometimes found impossible to bury them.

Not only are the manners, and customs, and industries of the people different now from what they were at the beginning of our period, but even the face of the country has changed. The meadows of rich sown grass, with sleek cattle browsing in them, which we see everywhere in the country to-day, the green hedgerows, the acres of turnips in long, regular rows, the prosperous fields of wheat, and oats, and barley—all these are evidences of the many lessons which the people of Scotland have learned during the last two centuries. In place of these, two hundred years ago, we should have seen, over the greater part of the country, one unbroken stretch of bare moorland, treeless and boggy, cultivated only in small patches, and chiefly on the slopes of hills, because the lower ground was too wet for cultivation.

How they Lived in the Country Two Hundred Years Ago

If the face of the country was different two centuries ago from what it is to-day, very different were the lives of the people who lived in it. The houses of the labourers and small farmers were mere hovels, built of stone without mortar, and turf, with roofs of turf or heather, and consisting often only of one room, in which sometimes at night the cattle might be found tethered at one end, while the family slept at the other. Even the houses of the "lairds", or land-owners, were lacking in many things which the home of every mechanic possesses nowadays. The walls were unpapered, the floors carpetless, for wall-papers and carpets were almost unknown in Scotland till after the middle of the century. No proper road connected an outlying group of farm cottages with town or village, or even one village or small town with another. Only a track, made by the hoofs of cattle, and in wet weather almost impassable, led through the ill-cultivated fields of oats and barley, which, together with the rough "kail-yard", or garden, supplied all the food of the labourers and their families. Beef and mutton they seldom tasted.

Almost entirely cut off, at least in winter, from even the nearest town, the dwellers in the country

knew little of what was going on in the outer world. We are told that country ministers in those days often prayed for the king weeks after his death!

Working-hours were long in the country, and wages very low. An unmarried labourer usually had his food and lodging in the house of the farmer who employed him, with fourpence a week in money, while a married one had to keep his family as well as he could on £7 or £8 a year —mostly paid in kind! (Of course, it must be remembered that the value of money was much greater in Scotland two hundred years ago, when it was extremely scarce, than it is to-day.) Besides working in the fields, farm labourers often built their own cottages, and made what rude furniture they possessed, as well as some of the primitive tools used in agriculture, and the horn spoons and mugs which were their only table utensils, all the members of a family eating out of one dish. The women spun the wool that clothed the family, bruised the barley in the "knocking-stones", which, in the days when no barley-mill existed, every household possessed; baked the bannocks, and brewed the beer, which was the usual drink.

The ground was almost always cultivated in the "run-rig" system—that is, instead of each farmer having a separate field, or fields, of his own, one field would be divided into several strips, or "rigs",

of twenty to forty feet in breadth, each of which belonged to a different tenant. Only about half of each "rig" was cultivated, a strip, or "baulk", being left uncultivated on each side to separate each man's rig from his neighbour's. One plough —a very clumsy implement, drawn by eight, and sometimes even twelve, oxen — was owned in common by the tenants of the field. No one tenant could begin to work without the consent and help of the others, nor could he introduce any improvements in the cultivation of his own strip, or strips, of land without giving offence to the holders of those on either side of them. Sometimes a field might lie untilled for weeks while the owners wrangled among themselves about the proper time to begin ploughing!

A farmer usually paid his rent in kind—in oats and barley, and cattle, fowls, and eggs—and twice a year, on term days, a string of horses might be seen stumbling along the marshy track to the laird's "girnal", or granary, laden with the farmers' rents. Though rents were very low, so poor was the yield of the ill-cultivated soil that even a pretty large farmer could often do no more than pay his rent and labourers, and feed his family. According to an old saw, the yearly produce was divided into three parts—

> "Ane to saw, ane to gnaw,
> And ane to pay the laird witha'".

School in the Beginning of the Eighteenth Century

Education, in Scotland, had always been highly valued; and by means of the Parish School system, it had been sought to bring it within the reach of the poorest long before any such attempt had been made in England. In 1696 the Scottish Parliament had passed an Act which ordered the appointment of a schoolmaster in every parish of Scotland, and the provision of a commodious house for a school. This Act, however, it was found impossible, in many parishes, to enforce, in spite of constant attempts to do so on the part of the various presbyteries; and up to the middle of the eighteenth century, we are told, there were large districts in Scotland, even in the Lowlands, where there was neither school nor schoolmaster. Comparatively few grown-up people were able either to read or write; in Fife, for instance, up to 1715, only one man in three being able to sign his name, and only one woman in twelve.

The Act of 1696 had ordered that the *heritors*, or land-owners, in every parish should be assessed for the payment of the salary of a schoolmaster, and the provision and maintenance of a school-house. At a time, however, when, owing to seven years of famine, and other causes, most

people in the country districts had barely sufficient food to keep themselves and their families alive, while hundreds were dying of starvation, rents must often have been unpaid, and land-owners have lacked the means to pay even the small sum of £5 to £11 yearly, which Parliament allowed as the salary of a schoolmaster.

School children had certainly a hard time of it in those days—especially in the country districts. Living often miles from school, they must have been obliged to set out in the cold winter mornings while it was still dark, and to tramp, bare-footed and bare-legged, through rain and storm, over pathless bogs and heather. Each child usually carried his, or her, dinner (which, in the case of the poorest, consisted only of some boiled greens tied up in a cloth); and in winter it was quite common for each to bring as well a peat for the school-room fire! On occasions when the roof of the school-house was rotten, and letting in the rain, we hear of the scholars being ordered by the kirk-session of the parish to carry straw to thatch it. In parishes where there was no school-house provided — and these were many— a church, or a granary, or a stable, or even a family vault has been known to do duty for a class-room. Often there were no seats for the children, who were obliged to squat on the ground when reading.

School-hours were long, and holidays few and far between. In summer, lessons began at seven in the morning, and went on till six in the evening, with a respite of two hours for meals. In winter the lack of artificial light in the school-house shortened the working day, but even in the dark season school lasted from sunrise to sunset. Saturday was just like the other days of the week; and even on Sunday mornings it was usual, at least in some places, for the children to assemble in the school-house, where they were examined in the Bible and the Shorter Catechism by the schoolmaster, and then marched to church under his charge. To children in the country the harvest season sometimes brought a holiday from school, as their parents wanted their help in the fields, and the presentation to the schoolmaster of a ripe ear of corn was a hint that it was time for school to break up.

From the Parish School, where they were taught reading, writing, arithmetic, and the Shorter Catechism, boys usually passed at nine years old to the Grammar School, where they learned Latin, and were allowed to speak no other language.

How they Lived in the Towns

At the beginning of our period, towns in Scotland were very small and poor places compared with what they are to-day. Aberdeen consisted —at any rate, for the most part—of a few streets of wood-faced, turf-roofed houses; Inverness was a mere row of turf-covered hovels with bottomless baskets for chimneys; and Glasgow, now the centre of a world-wide trade and commerce, was a little town of about twelve thousand inhabitants. Even Edinburgh, the capital, had only about thirty thousand inhabitants, crowded together within the walls with which it was surrounded. It consisted almost entirely of one mile-long street, stretching from Holyrood Palace to the Castle, with narrow "wynds" and "closes" opening off it.

To make the most of the limited space, the houses in Edinburgh were built high, sometimes consisting of ten and even fifteen stories, and let in flats to people of very different classes. One tall house in the Canongate might contain the families of a duke, a lord of session, a minister, a shopkeeper, a cobbler, and a sweep, the poorer in the cellars and attics, the richer in the intermediate floors. The common stair, off which the dwellings of noble, and tradesman, and mechanic opened, was narrow, dark, and filthy. The street,

if not narrow and dark (the High Street and Canongate were of a good breadth), was filthy too, with gutters choked with refuse, in which pigs might be found scraping for food.

People were early astir in those days. Before seven in the morning shops were open, and the streets were alive with a varied throng, each man's trade or calling being proclaimed by his dress. Up and down the long stairs of the tall houses, there was a steady stream of people carrying from the public well to the different households their supply of water for the day, of fishwives with creels, and apprentices from the neighbouring barber shop bringing home newly-dressed wigs. As there was only one letter-carrier for the whole town at that time, people usually called for their letters at the Post Office. If they wished to consult a doctor or lawyer, they would go to one or other of the taverns, where a great deal of business was usually transacted.

At eight o'clock the families in the cellars and attics would be "supping" their porridge or brose, while those in the intermediate flats would be partaking of "collops" (minced beef), or mutton, and fowl, washed down with ale, and served on wooden dishes, or in pewter vessels (for china and earthenware dishes were scarcely seen in Scotland at that time). If waited on by a maid, she would be bare-legged, and clad in a short, coarse woollen skirt.

Women servants at that time, even in wealthy families, wore neither shoes nor stockings, unless perhaps on Sundays, when they went to church. At church they wore, like their mistresses, a tartan plaid wound round their heads and shoulders—the universal fashion among the women of Scotland until about 1760.

Dinner, which was usually about one o'clock, did not differ much from breakfast; and in winter there was little variety possible from day to day, even for the richest. From Martinmas to spring even well-off families dined day after day on salt meat, fresh meat being hardly to be got in winter.

In the days when artificial light was dear and bad, people usually went to bed early. As the bells of St. Giles' church chimed ten o'clock, the windows of the houses were thrown open, and with the warning cry of "Gardy loo!" (French, *Gardez l'eau*, *i.e.* Take care of the water), the refuse and filth of the household splashed on to the pavement, where it lay all night till, in the morning, a leisurely scavenger swept up the worst of it.

Roads and Travelling

Nothing did so much to hinder the social and industrial development of Scotland during the first half of the eighteenth century as the total absence

of good highways even between the towns. At a time when, even between Edinburgh and Glasgow, goods were carried in baskets, or creels, on the backs of horses, and it was a hard day's work for a horse to carry two hundredweights of coal a distance of four miles, it was not possible to make much advance in trade or industry. The people, too, shut into their own particular district, or village, or town, by the absence of good roads connecting them with other places, had little opportunity of learning anything new; and we are told that the inhabitants of two neighbouring parishes often differed from each other in customs and habits, and even in accent and manner of speech.

Up to the middle of the century wheeled vehicles were hardly ever seen in the country. When a gentleman did venture to drive out over the muddy tracks, which were the only roads in country districts, he would be preceded by a "running footman" to clear the way for the lumbering coach-and-six, behind which two more footmen were stationed, armed with long poles with which to raise the vehicle when it capsized in a deep rut. The cart, so homely and familiar an object in our days, was an object of interest and curiosity a hundred and fifty years ago, and did not come into general use, even in the Lowlands, till about 1760. In the north, the older method of transport—by means of creels on the

patient backs of women and horses—was still in practice in the fields at a much later date.

Travelling even a short distance was, in such a state of the roads, quite a serious matter. As late as 1750 we hear of a carriage-and-four taking a whole day on the journey from Edinburgh to Haddington—a distance which a boy or girl nowadays could cycle easily in a couple of hours. It was about the same time that a stage-coach began to run between Edinburgh and Glasgow twice a week. It took a whole day on the journey, with halts for meals, and cost each traveller nine or ten shillings. Between Edinburgh and London a coach ran monthly, taking about a fortnight on the road. The journey was regarded as so long and dangerous that it was quite common for people to make their wills before setting out.

The inns in Scotland, like the roads, were as bad as possible. The beds were dirty and uncomfortable, the food poor and ill-cooked, the dishes few and unwashed. One mug had usually to do duty for a whole company, and even after the middle of the century it was customary for travellers to carry with them a knife and fork, as those utensils were not commonly provided in the inns.

Friends who lived in different parts of the country saw and heard but little of each other in those days. Posts were infrequent and irregu-

lar. In the country, letters were not delivered at the houses of the people to whom they were directed, but lay at the nearest post-office until they were called for, which, unless they happened to be expected, might be for weeks, or even months. In the towns the arrival of the post-runners from other places was quite an event; and in Glasgow the arrival of the Edinburgh post was announced by the firing of a gun. Up to 1717 the letters between those two towns were carried by men on foot, who started twice a week from each town, taking a day and night on the road. After that date a horse-post was started, who did the distance in ten hours, travelling during the night, and arriving at six in the morning.

CHAPTER II

EFFECTS OF THE UNION

Though, as was said in the Introduction, the Union was to prove in the end a great boon to the trade and industry of Scotland, its first effects appeared to be unfavourable—except, indeed, in Glasgow, where, as we shall see, a few long-headed merchants were quick to see, and take advantage of, the opportunities which it afforded to them. A modern writer has said that, "for twenty years it was only the disadvantages" of the Union that were felt. This is quite true in general, though, as we shall see, there were a few trades which experienced almost at once the advantages secured to them by the Union.

Of course the Union of the two Parliaments could not put an end to the bitter feeling of rivalry and dislike which still existed between the two old enemies, England and Scotland, more than a century after their crowns had been united; and for several years after 1707, whatever was wrong in Scotland was apt to be laid to the charge of the Union with England. Some real disadvantages, however, the Union undoubtedly brought to Scotland. The chief of these was the

increased burden of taxation, and the unbending regularity with which the taxes were levied by the English officials employed for the purpose. Under the Scottish Parliament the taxes had been light, and the system of collecting them seems to have been not too severe; and it was only natural that the people of Scotland should feel aggrieved at the increased taxes which the Union brought, and the host of stern and proud, if also honest and upright, English officials by whom they were collected.

Another disadvantage due to the Union was the competition of English merchants in Scottish markets. If English markets were now thrown open to Scottish goods, Scottish markets were, of course, open to English goods; and the Scottish woollen trade was injured for a while by the large quantities of woollen goods, better and cheaper than could be produced in Scotland, which came into the country.

But the Scottish industry which suffered most by the Union was the fishing trade. As the shores of Scotland swarmed with cod and herring, and its rivers with salmon, the catching, salting, and exporting of those fish formed, at the time of the Union, the most prosperous industry in the country. The heavy duty imposed on salt by the British Parliament almost ruined it; and its failure threw hundreds of people out of employment.

Among the results of the Union may be counted the attempted invasion of the country in 1708. James VII, who, in 1689, had been forced to abdicate the thrones of England and Scotland, had died a few years before the Union took place, leaving a son who, in 1708, was about twenty years of age. According to the opinion of many people in England, and of a still greater number in Scotland, this young man, though an exile in France, was the rightful sovereign of Great Britain. The king of France, at that time at war with England, resolved to take advantage of the feeling of discontent, to which the Act of Union had given rise in Scotland, to stir up a rebellion in that country, and so to keep his enemy employed at home. He therefore fitted up an expedition, consisting of five men-of-war and several smaller vessels, on board of which were a force of some four or five thousand men, and the unfortunate son of James VII.

Early in the spring of 1708 the expedition set sail for the coast of Scotland, where the prince expected to be joined by an army of his Scottish supporters. Unfortunately for him, however, the preparation and setting out of the expedition had been watched by an English fleet; and though the French vessels had reached the Firth of Forth before it was discovered that they were being followed, the admiral thought it wisest to

return to France, without even landing his forces in Scotland.

Increase of Cattle Trade and Linen Manufacture

While, as one consequence of the Union, the Scottish fishing trade was almost ruined, other trades and industries were springing into new life and activity. Even before the Union, large quantities of Scotch grain, and large numbers of Scotch cattle, had yearly been sold to English people; after the Union the trade with England in grain and cattle increased largely. The cattle trade, in particular, became so profitable that even Highlanders belonging to noble families laid aside their pride of birth to take part in it. "Better sell *nowte* (cattle) than nations," the brother of the Earl of Seafield is reported to have said when rebuked for entering the cattle trade by the earl, who had helped to bring about the Union. At the yearly cattle fair at Crieff thousands of cattle were sold to English dealers, who sometimes hired the poor Highland drovers, at a wage of a shilling a day, to drive the animals into England—no easy task at a time when no good high-roads, and few bridges, existed. Even now we can see traces among the Scotch hills of rough tracks, known as old drove roads, which have been formed by the

hoofs of successive herds of cattle driven southwards, over the passes in the hills and the fords of rivers, to their new owners' estates.

The branch of Scottish industry which soonest experienced the advantages of the Union with England was the linen manufacture. In England, though this manufacture was carried on to a considerable extent, it was not regarded as so profitable as that of woollen goods—for centuries the chief industry of the English—and there was therefore a market among the English for the linen manufactures of other countries. Scottish merchants had been in the habit, long before the Union, of selling linen in English markets; but the large duty imposed on the goods made the profits very small; and towards the end of the seventeenth century, the trade in linen between the two countries had almost ceased. In order to protect the woollen manufacture in Scotland, the Scottish Parliament had passed an Act forbidding the importation of English woollen goods; and the English people had retaliated by seizing Scotch merchants of linen in England, whipping them, and making them promise to cease to sell their goods in English markets. When the Union took place, the duty on Scotch linen imported into England was removed, and the English markets were thrown open to it, and—what was even more important for the future of Scot-

land—the markets of the English colonies. In the course of a few years after the Union, the Scottish linen manufacture had become large and prosperous. We are told that soon there was hardly a house in the country in Scotland, from the largest to the smallest, that did not possess a patch of ground in which flax was grown; and hardly a Scotchwoman who was not busy spinning flax. Besides this, English manufacturers came to Scotland, and set up works for sail-cloth, damasks, and other linen cloths never before made in the country, which gave employment to large numbers of poor Scotch people.

In the course of a few years, the coarser woollen manufactures of Scotland found a large sale in England and her colonies, though Scotch weavers could not compete with English in the production of the finer woollen fabrics. The removal of the salt duty, too, after a while led to the revival of the fishing industry.

The Rebellion of 1715

Before the benefits which were to arise from the peaceful union of the two countries so long at war with each other could be fairly felt in either, an event occurred which threatened to check the dawning prosperity of Scotland. This was the Stuart rebellion, which became known as

"the Fifteen", because it took place in 1715, while a later one, which occurred in 1745, was spoken of as "the Forty-five".

In 1714, Queen Anne had been succeeded on the throne of Great Britain by George the First, who was already sovereign of the German principality of Hanover. Though, through his mother, George was descended from James VI, on his father's side, and by education, character, and sympathy, as well as in speech, he was entirely German, and for that reason, and others, unpopular with his British subjects. A powerful Scottish noble, the Earl of Mar, who had been unable to win the favour of the new king, resolved to take advantage of his unpopularity to stir up a rebellion among the Jacobites, as the friends of the exiled Stuart princes were called. He set up his standard in Aberdeenshire in support of the son of James VII (the prince who had come to Scotland with the French Expedition in 1708), who was then living in France as the Chevalier of St. George; and in a short time crowds of armed men, chiefly Highlanders, had flocked to it. In two or three weeks Mar was able to enter Perth with an army of about five thousand horse and foot. Soon afterwards a number of gentlemen in the north of England, who were favourable to the Pretender, as the unfortunate Stuart prince was called by those

opposed to him, took the field with their armed followers; and were joined by a considerable force raised by the Earls of Nithsdale and Wintoun, and others in the south of Scotland.

The entire government forces in Scotland at that time did not number more than about fifteen hundred men, who were under the command of the Duke of Argyle. Had Mar marched against this small force, he must surely have been able to overcome it. Instead of doing so, however, he remained at Perth for about two months, while new recruits continued to join him. At length he resolved to force the pass at Stirling Bridge, which was guarded by the Duke of Argyle, whose force now numbered about three thousand. The duke crossed the Forth, and advanced to meet the enemy at Sheriffmuir, near Dunblane. The battle which was fought there on the 13th of November could not be claimed as a victory by either side; but on the same day the Jacobite party received a crushing blow by the defeat and surrender, at Preston, of the army of English and Scottish Jacobites in the north of England.

In spite of this defeat, however, James Stuart landed at Peterhead towards the end of December, and put himself at the head of Mar's forces, which had very much diminished in numbers. The arrival of the prince did not do much to advance his cause. His appearance did not impress them

in his favour; and instead of trying to rouse the spirit of his followers by showing a heroic spirit himself, he became utterly downcast and dejected. When it was known that the Duke of Argyle was marching on Perth, instead of resolving to defend themselves there, the prince and his followers resolved to leave the town. On the 30th of January, the anniversary of the death of Charles I, his grandson retreated, without having struck a blow, to Dundee; and soon afterwards sailed away with Mar in a French vessel from the shores of the kingdom he had come to win. A few days later the army of rebels was disbanded, and the Rebellion of 1715 was ended.

The Rise of Glasgow

As was said in the last chapter, it was in Glasgow that the advantages of the Union were soonest felt, a few long-headed Glasgow merchants being quick to see, and to take advantage of, the opportunities which, as we shall see, it afforded to them. At the time of the Rebellion of 1715, the town had already begun to make some progress in that commercial enterprise, which, in course of time, was to raise her to the proud position, which she now occupies, of second city of the United Kingdom.

Even before the Union, she had given evidence

of possessing a spirit of commercial enterprise. Though chiefly engaged in herring fishing, she carried on a successful trade with Bristol, to which she sent linen, hides, &c., bringing back tobacco (which she manufactured into snuff), sugar, and other English manufactured goods. She possessed a sugar-refinery, and was the only town in Scotland where soap was made, while several attempts on the part of Glasgow merchants, at the end of the seventeenth century, to set up manufactures of woollen goods, hardware, &c., were prevented from being successful only by the losses sustained through the failure of the ill-fated Darien scheme.

Still, it is from the Union with England that we must date the real beginning of the commercial greatness of Glasgow. So long as European ports afforded the chief outlet for Scottish foreign trade, Glasgow could not compete with the towns on the east coast. The Union, however, by throwing open the American colonies to Scottish trade, was to remove its chief seat from the east, to the west, coast.

At that time the river Clyde, on which Glasgow is situated, was so shallow that no vessels, except very small craft, could sail up it to the city, and that only at high tide. Accordingly, some twenty miles farther down, the magistrates had built a harbour, round which has grown a town still

known as Port-Glasgow. There, or sometimes at Dumbarton, vessels unloaded, their cargoes being carried to Glasgow on horseback. The "Broomielaw"—now the name of a part of the Glasgow quays—was at that time a bank or hillock covered with broom, which in early summer was golden with blossom. Visitors to Glasgow at that period describe it as a pretty little town, with a fine old cathedral and bridge, beautiful orchards, and many kitchen-gardens. Its citizens lived a regular and peaceable life, with few, or no, amusements, and the strictest Sunday observance.

Neither the lack of vessels nor the shallowness of the Clyde prevented the enterprising Glasgow merchants, after the Union, from attempting to establish a prosperous trade with the American colonies. They chartered vessels from Whitehaven, loaded them with the goods of the country, and sent them to Maryland and Virginia, from which they returned in course of time with cargoes of tobacco in place of the goods which had been sold. Soon a great part of the tobacco trade of the country came into the hands of a few Glasgow merchants, and all the tobacco that entered France was bought from Glasgow. By 1718 the small company of adventurous merchants had prospered so well that they had a vessel built for themselves at Greenock, which crossed the Atlantic to Mary-

land and Virginia, and came back laden with tobacco. But the success of the Glasgow traders roused the jealousy and enmity of Bristol, Liverpool, and Whitehaven, which had previously had the entire tobacco trade of the country. These three towns united in petitioning Parliament against their Scottish rivals, who were underselling them, and for a while the tobacco trade of Glasgow was seriously injured. In the end, however, the industry, perseverance, and frugality of the Glasgow merchants triumphed over all obstacles, and Glasgow advanced by rapid strides in commercial importance and prosperity.

CHAPTER III

FIRST SIGNS OF PROGRESS

It was not till after the middle of the eighteenth century that the people of Scotland showed any marked improvement in their ways of living, and carrying on their daily work. The mass of the people, indeed, sunk in a state of sloth and lethargy, looked upon any change with distrust and suspicion. Even during the first half of the century, however, there were a few who showed a spirit of progress—who tried to introduce improvements in agriculture, manufactures, and machinery. Among them were three women, whose names deserve to be remembered—the Duchess of Gordon, the Countess of Haddington, and Christian Shaw.

The Duchess of Gordon and Agricultural Reform

In an earlier lesson we have seen something of the "run-rig" system of agriculture, and of the evils connected with it. Besides these evils, there were many others connected with the methods in which land was cultivated at the beginning of our

period, some due to ignorance and want of energy on the part of farmers, others to the fact that farms were generally held, not on long leases, but only from year to year, and it did not seem worth while to expend money or labour upon them. For these reasons few or no improvements in the system of husbandry had been introduced in the course of centuries, the same implements and methods being in use as at the time of Bannockburn. A farm was usually divided into the "infield" and the "outfield". The "infield" was kept under a constant succession of crops—one year barley, the next year oats—until the soil had become so exhausted that in some cases it yielded only two seeds for every one sown. The "outfield", which was very much larger than the infield, was sown with oats for three years in succession, and then allowed to lie fallow for four or six years, when it became covered with "natural" grass—that is, with weeds, moss, and thistles, on which the cattle fed. No grass, or clover, or turnips were sown; no hedges or fences protected the growing corn from being trampled by inroads of cattle. "Gray oats", and "bere", the poorest kind of oats and barley, were the usual grain sown. In consequence of the bad system of cultivation, land had gradually decreased, rather than increased, in value; and we are told that the common rent of an acre of land was, for "infield", three shillings, and for

"outfield", one shilling, or one shilling and sixpence.

This was the state of things when, in 1706, Elizabeth Mordaunt, daughter of the famous Earl of Peterborough, married the eldest son of the Duke of Gordon, and came to live in Scotland. Before she had been long settled in her new home in Morayshire, she began to introduce improvements in the methods employed in the cultivation of her husband's land. Agriculture in England was still in a backward state, but it was more advanced than in Scotland. The duchess brought ploughs from England, and men to work them, who understood *fallowing*, which Scotch farmers of the time did not understand; she taught the people how to make hay, had fields sown with French grasses, laid out gardens, and planted barren moors with trees. During the next twenty years or so, a few land-owners in the north followed the example of the duchess, thereby greatly improving their estates; and in 1723 there was formed a "Society for Improving in Knowledge of Agriculture", composed of the chief land-owners in Scotland, who did their best to introduce a wiser system of husbandry. But the small farmers long resisted innovations; and the old methods of cultivation continued to be practised by the bulk of the people till far on in the eighteenth century.

ELIZABETH, DUCHESS OF GORDON

PROMOTER OF AGRICULTURE

From an engraving after a painting by Kneller

The Countess of Haddington and Binning Wood

When Dr. Samuel Johnson, the compiler of the famous Dictionary, visited Scotland far on in the eighteenth century, he remarked that "a tree in Scotland was as rare as a horse in Venice". This was no doubt an exaggeration. In the Highlands there were still large tracts of forest; and even in the Lowlands there were usually at least clumps of trees surrounding gentlemen's country houses; but it is true that, during the greater part of the eighteenth century, the absence of trees was a striking feature in a Scotch landscape. The ancient forests with which the country was once covered had, at least in the Lowlands, been gradually used up as timber or fuel, or cut down in raids. Timber was so scarce in the country that large quantities were annually imported from Norway for use in the building of ships or houses; and again and again in the course of the previous centuries, Acts had been passed by the Scottish Parliament to protect the trees of the country, and to enforce planting.

In spite of those Acts, however, the country was on the whole bare of trees; and the only planting that was done was in the immediate neighbourhood of houses. Acorns, we are told, were usually bought by the pound, or even by the

ounce, to be sown in sheltered spots in gentlemen's gardens, it being believed that the trees could not grow up in the open. The absence of trees left the crops exposed to all the storms that blew, and the ground marshy and malarial. Ague, a disease which is scarcely ever seen in Scotland nowadays, was quite common amongst country labourers in the eighteenth century, in consequence of the wet and boggy nature of the soil.

The first person in Scotland to begin planting on any large scale was the Earl of Haddington, whose wife, a sister of the Earl of Hopetoun, had somehow taken a deep interest in the subject, and induced him to make some experiments. Surrounding his house at Tyninghame, near North Berwick, was a large tract of low ground on which it was believed no trees would grow, because of the nature of the ground, and the exposure to the sea air. But the earl had already begun some improvements in agriculture, such as those introduced by the Duchess of Gordon. He had brought some farmers from Dorsetshire, and had had fields enclosed and laid out according to their advice. He found, however, that his crops were likely to suffer from exposure to the sea-winds; and at the suggestion of his wife, he resolved to plant the tract of low land along the sea-coast with trees to shelter the fields. The attempt was made in the year of the Union; and to the amaze-

ment of all, the trees grew and flourished, and the bare tract of land became a thick plantation known as Binning Wood. Sheltered by this wood, fields which before had been barren became fertile; and the earl was encouraged to plant another large tract of sandy ground, and to introduce other improvements in the management of his land.

Other land-owners, seeing the success of the earl's attempts, took to planting on their estates; and before the middle of the century, planting became quite a fashionable pastime among landed proprietors in Scotland. For long, however, the mass of the people remained prejudiced against the planting of trees, believing that trees injured the crops by drawing the nourishment from the soil, and by harbouring birds which ate the seeds. In some districts they went out in bands during the night, tore up the young saplings, and broke the branches of the larger trees. It was not till towards the end of the century that the results of the labours of the early agricultural reformers began to be seen, and that people in general found the advantage of having the soil drained, and the fields sheltered from storms.

Christian Shaw and the "Bargarran Thread"

The life of Christian Shaw gives us a strange illustration both of the ignorance and superstition that still prevailed among the people of Scotland, and of the new spirit of progress and industry which was beginning to awake in the country. She was the daughter of John Shaw, the "laird", or owner, of Bargarran, a small estate in the neighbourhood of Paisley. When she was a girl of eleven or twelve, she was the chief cause of a celebrated legal enquiry, long known as the "case of Bargarran's daughter". She had become subject to "fits", or attacks of a very violent nature, sometimes remaining quite stiff and insensible for half an hour, and at others being racked with acute pain. Medical science at that time was in a very backward state; and the doctors whom her parents consulted could do nothing for her. The child herself declared that her sufferings were due to witchcraft, she having, a few days before her first attack, given offence to a woman who had the reputation of being a witch. It gives us a vivid idea of the ignorance and superstition of the time to find that such a statement, which would only be laughed at now, was listened to seriously, and led to a trial, which lasted for months, and ended in the execu-

tion of five people. While the trial was going on, we are told, the attacks to which the little girl had been subject ceased altogether, and she was never troubled with them again. It was in 1697 that this famous trial took place; but for nearly forty years longer witchcraft was still regarded by the law of Scotland as a crime which could be punished with death. Not till 1736 was the act against witchcraft abolished.

Meantime Christian Shaw had grown up into a healthy and industrious woman, who greatly benefited the small town of Paisley by the new industry which she started. At that time every woman—from the highest to the lowest in the land—was accustomed to spin in her own home flax or wool, which was afterwards woven into linen or woollen cloth. Christian had become a good spinner of fine yarn, when the idea occurred to her of manufacturing it into thread, which had never before been made in Scotland. Her first attempts were very small, as she did every part of the process with her own hands, even bleaching her materials herself on a large slate in one of the windows of the house. She succeeded so well that she was able to teach a younger sister and some neighbours the art of thread-making, which she had discovered for herself; and a friend, Lady Blantyre, carried a packet of the thread to Bath, where she sold it to some lace manufacturers.

Soon afterwards Christian was enabled to improve her invention through the help of a member of her family, who learned the secrets of the thread-manufacture in Holland, and especially how to construct and manage twining machines. Some machines for twining were set up in the neighbourhood, the young women were taught to make thread; and soon a thriving industry was established in Paisley and the district. *Bargarran thread* became well known, and sold for a high price. Christian Shaw had now become the wife of a minister in the neighbourhood; but she continued to carry on the business of thread-making, as did also her mother and sisters. So were laid the foundations of the great trade for which Paisley is famous in the present day.

The First Barley-Mill in Scotland

The art of thread-making was far from being the only one for which the Scotch were indebted to the Dutch, either wholly or in part. More than one Scotch visitor to Holland, about the beginning of the eighteenth century, contrived to learn the secret of some art and craft practised by the Dutch, in spite of the jealousy with which they were guarded from the prying eyes of strangers; and more than one Scot managed to smuggle out of the country Dutch machinery and Dutch work-

men. One Scotch lady, Mrs. Fletcher, while travelling in Holland, contrived to make her way into a linen factory, accompanied by two mechanics disguised as men-servants. All three watched the looms at work; and on their return to Scotland, the lady made the mechanics copy the machinery which they had seen at work. With the help of this machinery she was able to produce linen superior to any which at that time could be made in Scotland.

It was the brother-in-law of this lady, Fletcher of Saltoun, an estate in East Lothian, who was the means of introducing the barley-mill into Scotland. Up to that time, the usual method of separating barley from the husk in Scotland was the slow one of bruising it between the "knocking stones", which stood at the door of every cottage in the country. For this reason, barley when prepared for cooking purposes was called in Scotland "knockit bere". During a stay of some time in Holland, Fletcher was struck by the superior methods employed by the Dutch both for separating barley from the husk, and for winnowing corn; and he resolved to introduce those methods into his own country. He therefore sent for a clever wright whom he knew, named James Meikle, to come to Holland to take plans of the machines in use there for these purposes. Meikle was to be paid one

shilling a day as wages, and one shilling for expenses; and so dangerous was the enterprise considered, that he was promised that, in the event of his death, £5 should be paid to his wife. Meikle succeeded, not without some risk, in procuring the iron-work of a barley-mill, and a winnowing machine, then called a pair of fanners. These he shipped to Leith, and afterwards set up at Saltoun.

Soon "Saltoun barley" became quite famous; and even after other mills were set up in Scotland, it continued to be the name by which prepared barley was known. But for many years the Saltoun mill was the only one in the country. The owners seem, indeed, to have imitated the Dutch in keeping secret the mechanism by which the barley was dressed. We are told that Mrs. Fletcher, the same lady who had copied the Dutch looms, spent her days in the mill (the door of which was kept on the chain to prevent strangers from entering unexpectedly), attending to orders and accounts for the barley.

Meikle was as successful with his winnowing machine as with the barley-mill. Before its introduction, the way in which the chaff was separated from the corn in Scotland was by letting a draught of air blow through the barn, in which the corn had been beaten with a flail, or by carrying the corn to a knoll exposed to the

wind, which blew away the chaff. So ignorant and superstitious were the people of Scotland at the time when Meikle first set up his fanners (about 1720) that it was looked upon as an impious thing to "create a wind" by means of a machine; and the ministers declared that "winds were raised by God alone, and that it was wrong of man to attempt to raise it himself". One minister spoke of the draught made by the fanners as "devil's wind"; and refused to administer the Holy Sacrament to those who made use of it!

General Wade and the Black Watch

While in the Lowlands there were signs of the awakening of a spirit of progress, in the Highlands a state of ignorance and lawlessness still prevailed. After the Rebellion of 1715, many small Highland chiefs, who had forfeited their property by espousing the Stuart cause, were left without any means of livelihood, and were driven to plundering the farms of those more fortunate than themselves, and carrying off their cattle. Among those who lived by robbery and "cattle-lifting", as it was called, was the famous Rob Roy Macgregor. This bold and daring man, who is the hero of one of Sir Walter Scott's most celebrated novels,

had been deprived of his little property through the Duke of Montrose. In order to revenge himself for what he regarded as an act of injustice, he gathered round him a band of armed followers, and every now and then swooped down at night on the property of the duke and carried off meal and cattle.

The practice of cattle-lifting prevailed so much in the Highlands that we are told that, towards the middle of the century, the value of cattle and horses stolen amounted to about five thousand pounds yearly. The robbers, whom there was no power in the north to repress, had become so daring that they were able in some cases to levy from farmers and land-owners a regular tax, known as "blackmail" — that is, in return for a sum paid to them yearly, they promised to protect the property of the person who paid it, and to prevent his cattle from being carried off.

In consequence of this state of things, the Government in 1724 passed an Act, ordering the disarming of the Highlanders, the formation of armed companies in the Government pay to keep order, the building of a line of forts, and the making of new roads in the Highlands. General Wade, an English officer, was sent to Scotland to carry out these orders. Six companies were formed of men belonging to clans which were loyal to the Government. They

numbered about four hundred and eighty in all, and were dressed in a dark-coloured tartan, from which they were known as the *Reicudan Dhu*, the Gaelic for Black Watch. They were posted in small companies in the lawless parts of the country, and did a great deal to keep order. Besides the Black Watch, General Wade had with him four hundred regular troops. At the head of his regular troops he marched into the country of the Jacobite clans — the Mackenzies, the Macdonalds, the Camerons, the Macleods, and others—and in each district compelled the men of the clan to march past him, lay down their arms, and drink the king's health, while the chiefs gave their oath to be faithful to king and government. Unfortunately, it afterwards turned out that, in many cases, it was only their oldest weapons which the men had given up, the others being carefully hidden away!

After disarming the clans, General Wade set to work to complete a line of forts, and to make roads connecting them with the south, so that if a rebellion broke out in the Highlands, troops could more easily be brought up. In making the roads, he employed his soldiers under the directions of some English engineers, among whom was one named Burt, whose letters, written on the spot, afford us a picture of the state of the Highlands at the time. It was far from being

an easy task which the general set his men. The work could only be carried on in summer, and often even in summer was stopped by storms. Then there were rivers to be spanned by bridges, rugged hillsides to be levelled, and marshes to be filled up. At the end of eleven years, however, the work was finished; the general had succeeded in making many miles of road good enough for wheeled vehicles in the roughest part of the country, where roads had never been known before. To celebrate the general's feat, a monument was erected near Fort-William, on which were inscribed these lines:—

"Had you but seen these roads before they were made,
You would lift up your hands and bless General Wade".

CHAPTER IV

PROGRESS IN THE CAPITAL

At the time that Christian Shaw was discovering the secret of an art, which was afterwards to give employment to hundreds of people, and General Wade in the north was carrying his roads over mountain and moor, in Edinburgh two men in particular were doing much to awaken a new interest in literature, and a new public spirit among the citizens — these were Allan Ramsay and George Drummond.

Allan Ramsay and the First Lending Library

For a hundred years there had been no poet of any importance in Scotland. Literature, like agriculture and commerce, was in a very low state in the country when, in 1725, Allan Ramsay's well-known Scottish drama, *The Gentle Shepherd*, made its appearance. Even before the publication of *The Gentle Shepherd*, Ramsay had become known in Edinburgh as a writer of Scotch poems, chiefly humorous. As a lad of fifteen or so, he had come to the town, where

he was apprenticed to a wig-maker, and afterwards set up in business for himself. While carrying on the calling of wig-maker, he employed his leisure in writing verses, which were printed on sheets of paper, and sold by hawkers in the streets. In a short time his poetry became well known, and we are told that it was common for the women of Edinburgh to send out their children with a penny to buy "Allan Ramsay's last piece". As his poems succeeded, Ramsay was able to give up the business of wig-maker, and to take to that of bookseller instead; and in 1720 his first volume of poems was published, and at once became popular.

Though Ramsay was far from possessing the poetical genius of our great national poet, Burns, yet he certainly had many of the gifts of a true poet; and the people of Scotland owe him a debt of gratitude, not only for having prepared the way for Burns, but for having reawakened an interest in literature in the country, both by his own writings, and by bringing those of other writers within reach of many readers, who, but for him, could never have seen them. At that time books were comparatively few, dear, and, for the majority of people, hard to get. There were no cheap editions of the works of the great writers, such as abound in the present day, no free libraries, and even no lending libraries of any sort. When,

in 1726, Allan Ramsay started a small circulating library in his shop in the High Street of Edinburgh, it was the first that had ever been known in the country. No doubt it must have done much to spread knowledge and a love of learning among the people of Edinburgh, if not in the rest of Scotland. Besides endeavouring to bring good books within the reach of his fellow-townsmen, Ramsay did what he could to cultivate among them a taste for music and the drama, which at that time were little appreciated in Scotland. Most Scotch people of the period were apt to take a stern and severe view of life, and to regard as sinful almost all forms of amusement, however innocent they may appear to us now. Ramsay, on the other hand, as he says of himself, was "mair to mirth than grief inclined", and believed that some amusement was good for people. As there was no playhouse, or theatre, in Edinburgh at the time, he undertook to build one, and had spent a good deal of money on it, when an Act of Parliament was passed, forbidding the acting of any play without a licence from the king or the lord chamberlain. This Act almost ruined Ramsay; but he bore his losses bravely, and by hard work, in time almost made up for them.

George Drummond and the Royal Infirmary

About the period we have now reached, there was founded in Edinburgh an institution which affords better proof than any we have yet seen of the growth and progress of the people of Scotland. This was the Royal Infirmary of Edinburgh. Until the people of a nation, or the citizens of a town, feel that they have duties to their sick and helpless fellow-creatures, and try to fulfil them, they cannot be regarded as civilized. Yet only two hundred years ago, there did not exist in the capital of Scotland a place where the poor could find shelter and care when they were sick, such as we find in many parts of the country nowadays!

Not only was there no place of refuge in Edinburgh for the poor in time of sickness, but the young men who intended to be doctors could not receive a medical education in their own country. Some young men went to Holland and studied medicine in the Universities of that country; but there were many men in Scotland who professed to be able to cure all manner of diseases without ever having had any training in medicine at all. The University of Edinburgh had been founded more than a hundred years before; but medicine was not regularly taught there till 1720, when Dr. Munro was appointed Professor of Anatomy. He

was succeeded in the chair by his son, and, after him, by his grandson, who helped to make the Medical School of Edinburgh, what it afterwards became, one of the most famous in the world.

In his attempts to found a regular medical school in Edinburgh, the first Professor Munro was greatly helped by George Drummond, who did more to improve the town at that time than any other person. He was a large-hearted, liberal-minded man, who several times was elected Provost of Edinburgh. When, largely through his help, several medical professors had been appointed in the University, he, as well as they, saw the necessity of having some means of enabling the students to study diseases.

He was also anxious that there should be some place where the sick poor could be properly cared for and treated. In 1725 it was resolved to raise the sum of £2000 to procure a house where the sick could be received and cared for, and the medical students could study diseases under the instructions of their teachers. In 1729 a house was opened, where a very small number of patients could be received. Small though it was, however, it enabled the people of Scotland to see the advantages of such an institution; and when, a few years later, it was resolved to build a hospital that could receive several hundreds of patients at once, contributions of every sort came in from

every class of people, and every part of the country, while many workmen—masons, slaters, glaziers, and carpenters—gave their help in the building free. When the new Infirmary was completed, the managers showed their sense of what they owed to George Drummond by placing his bust in the hall, with this inscription: "George Drummond, to whom this country is indebted for all the benefit which it derives from the Royal Infirmary".

But the people of Edinburgh are indebted to George Drummond for more than the Infirmary. It was he who planned the New Town—that part of Edinburgh, including Princes Street, which now forms the handsomest part of the city. It was he who proposed the draining of the Nor' Loch—a stretch of water and marsh that lay where now there are beautiful gardens. It was he who laid the foundation-stone of the Royal Exchange, and of the bridge connecting the Old and New Town—all public works showing that the spirit of progress had really awakened in the capital of Scotland.

William Ged and the Invention of Stereotyping

About the time when Allan Ramsay was trying to bring books within the reach of the poorer

citizens of Edinburgh by setting up a lending library, another man in the same town was engaged on an invention which, in course of time, was to have somewhat the same result as Ramsay's library, but on a much larger scale. This was William Ged, the inventor of the art of *Stereotyping*.

The word stereotype is derived from the Greek word *stereos*, which means firm, or solid, and is used in distinction from the *movable* types with which all printing was done before Ged's invention came into use. Movable types are small blocks of metal, on one end of which there is a raised letter. With these the printer forms words, keeping the letters uppermost; the words are arranged into lines, and the lines into pages, which are then fixed into frames. The letters are then covered with ink, and paper is pressed upon them. When it is removed it bears on its surface, in ink, the impression of the letters on the little blocks, which can then be used to form new words and pages.

It often happens, of course, that a great many copies of one book are wanted, and at different times; and before the invention of stereotyping, every time a book was to be reprinted the types had to be set up, letter by letter, just as had been done when the book was first printed. Now, William Ged saw that it would be a great saving

of labour and money, and would bring books within the reach of a far larger number of people, if some means could be invented by which a book could be reprinted without the necessity of setting up the types again.

Ged was not a printer, but a goldsmith by trade. He happened, however, to be employed by a printer, who was a relative of his, to pay his employees, and this turned his attention to the subject of printing. He was an ingenious man, and soon hit on the idea which has proved such an important development of the art of printing. It was to take a *cast*, or impression, of a page of movable types in stucco, which could afterwards be hardened by baking. From this cast a metal plate could be struck with raised letters (*fixed types*), from which the page could be reprinted any time it was wanted.

In 1725 Ged spoke of his invention to a friend, and a year or two later he entered into a contract with a London bookseller named Fenner, by which it was agreed that the latter was to advance the money necessary for carrying out the invention, and the two men were to share the profits. Ged went to London to make arrangements for bringing out his invention; but he was a simple, unworldly man, no match for the sharp, cunning people with whom he came in contact. He was deceived and cheated on every hand;

and after a stay of several years in England, he returned to Edinburgh without having succeeded in getting his invention started, and poorer than when he had set out.

Some neighbours now subscribed to enable him to start his invention in Scotland; and he sent his son James, a boy of twelve, to learn printing, in order that he might be able to help him. The boy learned quickly, and in less than a year was able to set up the types for the first stereotyped book, which was an edition of the Latin writer Sallust. His father sent the plates of this book to the Advocates' Library, Edinburgh, where they are preserved under a glass case as a curiosity; but he never succeeded in getting his invention taken up by printers during his lifetime, and died a poor man in 1749. His son, who had helped to print the first stereotyped book, narrowly escaped hanging for taking part in the Stuart rebellion of 1745, and afterwards went to Jamaica, where he died.

CHAPTER V

THE REBELLION OF 1745 AND ITS CONSEQUENCES

While Allan Ramsay was selling books, and discussing literature and the topics of the day with his many customers and friends in his little shop in the High Street of Edinburgh; while William Ged was still living, a disappointed man, and George Drummond, not at that time Provost, had still much public work to do, the citizens of Edinburgh were, one day in September, 1745, thrown into excitement and alarm by the report that Charles Edward, son of the Pretender, as he was called, was marching on the city at the head of an army. A few days later the small body of forces, which the magistrates of Edinburgh had been able to raise, and had posted on the road to the town, fled before the army of the prince, who entered the town without a blow being struck, and took up his abode at the palace of Holyrood. He was a very different person from his father, who had come to Scotland in 1715. In appearance he was tall and handsome, with fair, curling hair and blue eyes; in character he was bold and daring, with a strong sense of honour, and a deep

faith in the rightfulness of his cause, while his manners were mild and winning. Among the Jacobites he aroused the warmest affection and admiration.

A few days after his arrival in Edinburgh, he marched out to meet the forces of the king, under Sir John Cope, which were posted at Prestonpans. Although the young prince's army was a mere rabble of ragged, undisciplined, and ill-armed Highlanders, with neither cavalry nor artillery, he succeeded in defeating Sir John Cope, and returned in triumph to Edinburgh, where he spent some days in unsuccessfully besieging the castle, which held out for the king.

In the beginning of November, having been joined by fresh troops, he marched into England, besieged and took Carlisle, and advanced as far as Derby without encountering any of the royal forces. But the English Jacobites did not flock to join him, as he had hoped they would do; and two large armies were in the field against him. His ill-clad men were suffering great hardships from exposure so late in the year; and his officers urged retreat to Scotland. Much against his will he was compelled to yield. In advancing he had ever been in the front, gay, cheerful, courageous; in retreat he hung behind his army, silent and dejected. At Falkirk he gained a small victory over the king's forces under General Hawley;

but it did little for his cause. He was forced to retreat still farther northward, pursued by an army under the king's son, the Duke of Cumberland, while his men dropped away from him, and money and supplies became daily more scarce.

It was in April, 1746, that the rebel army at length met the superior forces of the Duke of Cumberland on Culloden Moor, and was utterly routed. The hopes of the Jacobites had now received their death-blow. The unfortunate Stuart prince, escaping after the battle, was forced to lie in hiding, while hundreds of men were scattered over the country searching for him. Once he managed to escape from among his enemies by being dressed in women's clothes, and passed off as the servant of Flora Macdonald, whose name has ever since been famous in Scottish song and story. After many months he succeeded in making his escape to France; and never again returned to Scotland.

Some Good Results of the Rebellion

Of course the rebellion could not be put down without some suffering, and even bloodshed; but it was thought that the Duke of Cumberland treated the rebels with unnecessary severity, and the nickname of "the Butcher" was given him in consequence. Numbers of men who had joined

the Stuart prince were hanged without trial. The houses of Highland chiefs were pillaged and burnt. Cattle were collected from farms and crofts, and driven to the duke's camp. Provisions of all sorts were carried off from their owners, and in many cases whole families were left to perish from famine.

Nevertheless the rebellion was not without good results. Among these, was the fact that the people of Scotland were freed from the fear of another Stuart rising by the very completeness with which the one which had taken place had been quelled. Then the money sent from France to help the Jacobites, and from England to pay the Government troops, proved very useful in Scotland, where at that time it was very scarce; and the estates forfeited by the proprietors who had taken part in the rebellion were much better cultivated by the agents of the Government than they had been by their former owners.

A more important result than any of these was the doing away with what was known as the right of *heritable jurisdiction* possessed by the nobles, chieftains, and owners of ancient estates in the country. In accordance with this right, the large land-owners could try, imprison, and sentence all offenders within their territories, whether they were their own tenants or strangers. In some cases they dealt justly with offenders; but more

often they abused their power, keeping unhappy people for months in the wretched dungeons beneath their castles before bringing them to trial. The trials, when they took place, were short, the culprits not being defended by clever lawyers. The sentence was often death by hanging or drowning; and the offender was dragged to the nearest tree or pond without loss of time.

Sometimes, we are told, the judge gave the condemned man the choice between being hanged or transported to the Plantations—that is, to the estates of the colonists in America or the West Indies. If he chose the latter alternative, he was *sold*, and shipped to the colonies, where he had to work as a slave on the estates of some planter for the rest of his life. The sale of condemned culprits was quite a source of income to the land-owners who possessed the right of heritable jurisdiction.

It was not, however, only condemned criminals who were sometimes sold into slavery in Scotland. We are told that between 1740 and 1746 there was a regular trade in the country for supplying the colonies with men to work the land; and young men and boys were often seized by companies engaged in this trade, bound, and carried off to America, while during the terrible famine in Scotland in 1740 parents were known to sell their children into slavery for one shilling!

This trade in human beings came to an end soon after 1746, when Parliament passed an Act which abolished heritable jurisdiction. From that time onwards offenders could be tried only by the regular judges appointed by the king. No Act ever did more to bring law and order into the unsettled parts of the country, and to reconcile the rebellious Highlanders to the Government. In carrying it out, the Government had wisely resolved to pay sums of money as compensation to those land-owners who had been deprived of the right of heritable jurisdiction. No money was ever spent to better purpose. It not only made friends for the Government of many who had been bitter foes, but it put into the hands of many poverty-stricken chiefs the means of improving their property and cultivating their land. It is from that time that the real Union of England and Scotland may be said to date, and that there begins for Scotland a period of remarkable prosperity in agriculture, commerce, and manufactures.

Scottish Songs

Among the good results of the Rebellion of 1745 we may count the fact that it furnished the subject of some of our most popular Scottish songs—such as "Wha wadna fight for Charlie?"

"Come o'er the stream, Charlie", "Charlie is my darling", "The Lament of Flora Macdonald", and others. The words of those songs known at the present day are indeed the work of writers of a time much later than the Rebellion; but the present versions are either translations from the Gaelic, or improved editions of older Scottish verses.

A few of our best-known Scottish songs, however, were composed in their present form during the twenty years or so that followed the Rebellion. More than twenty years before that event, people in Scotland had begun to turn their attention to the music and songs of the country, which began to be known and appreciated even beyond Scotland. About 1720, we are told, Scotch songs had become popular in London through the singing of a Scotchman, named Thomson, who had a remarkably sweet tenor voice. In 1725 Thomson published a collection of Scottish songs with the music, and this was followed by others.

In 1728 a number of people in Edinburgh, who had been in the habit for a few years of meeting once a week to study music together, formed themselves into a regular musical society, consisting of seventy members. The meetings of this society were celebrated in verse by Allan Ramsay, who, as we saw, was a lover of music as well as of poetry.

At the time that the Young Pretender made his

entry into Edinburgh, there was living in the town a lady who composed one of the best-known of our Scottish songs. This was Mrs. Cockburn, the authoress of "The Flowers of the Forest". Mrs. Cockburn, who was not in sympathy with the Jacobites, on one occasion while the siege of the castle was going on, was stopped on returning from a drive outside of the town, at the West Port or gate, by the prince's Highland guard. As she had in her possession at the time a copy of some verses in which Prince Charles Edward's proclamation in Edinburgh was ridiculed, she feared she might be arrested; but to her relief she was allowed to pass with a warning not to carry political verses about with her in future.

Another version of "The Flowers of the Forest", less well-known than that composed by Mrs. Cockburn, but not less beautiful, was written by Miss Jane Elliot, a lady who lived about the same time as Mrs. Cockburn. Miss Elliot's version, which begins "I've heard them lilting at the ewe milking", is ancient in style, resembling an old ballad, and is sung to an old air, while Mrs. Cockburn's, beginning "I've seen the smiling of fortune beguiling", is much more modern in style, and the air to which it is sung is also modern.

One of the most touching of all our Scotch songs, "Auld Robin Gray", was composed, about fifteen years after Miss Elliot's version of

"The Flowers of the Forest" made its appearance, by another Scotch lady — Lady Anne Lindsay, daughter of the Earl of Balcarras. For over fifty years this lady kept the authorship of this beautiful ballad a secret; and it was not till she was an old woman (in 1823) that she confessed to Sir Walter Scott that she had written it when she was a young girl in 1771. The beautiful air to which it is sung was composed by an English clergyman to suit the verses.

CHAPTER VI

INCREASING PROSPERITY OF THE COUNTRY

Up to the middle of the eighteenth century, though the trade and commerce of Scotland had been slowly increasing since the Union, there was no very marked improvement in the condition of the people, except perhaps in Glasgow, where the citizens, as we have seen, had been quick to take advantage of the opening afforded to them by the Union for trading with the American colonies. After the suppression of the Rebellion of 1745, however, as was said in last chapter, Scotland seemed to make a remarkable leap forward in agriculture and in manufactures. Work became more plentiful, wages rose higher, and a more active spirit awoke among the people, which led to the introduction of improved methods in every department of work.

Improved Cattle-feeding—the Turnip

In the general improvement which was taking place in the country, the sheep and cattle had their share. In the beginning of our period the lives of the poor creatures were wretched indeed.

Farmers at that time valued their sheep only for their wool, and their cows and oxen only for their milk, and as beasts of burden. They did not think of fattening them, as modern farmers do, for food for human beings. The poor animals were, therefore, so miserably fed that they were little more than skin and bone. In summer they were driven out by a herd to pasture on waste ground, or in the "outfield", which was covered with a crop of what was called "natural grass" —that is, a scanty sprinkling of grass, which had grown up without being sown, amongst nettles and weeds of all sorts. In winter they fared even worse than in summer. All through the winter months, they were kept shut up, and fed on straw, boiled chaff, and sometimes mashed whins. Of course, the poor creatures could not fatten on such food; and when they were brought out into the open in spring, they were mere skeletons, and so weak that they often had to be lifted on to their legs. In some places, we are told, it was common for neighbours to come and help each other at "the lifting", as it was called!

As fodder was so poor and so scanty in winter, it was an ancient custom among farmers to kill a large number of their sheep and cattle at Martinmas—a custom which was known as "killing the Mart". The slaughtered animals were salted,

and formed the food throughout the winter of those who were able to buy butcher's-meat at all. As has been said in an early chapter, fresh meat was hardly to be had in winter, even by the richest.

We have seen that the Duchess of Gordon, the Earl of Haddington, and a few other landowners had, early in the century, introduced the sowing of clover and rye-grass; but it was long before their example was followed by farmers in general, who talked of those green crops with contempt as "English weeds".

During the second half of the eighteenth century, the cultivation of the humble turnip made almost as complete a revolution in agriculture as the employment of steam did later in manufactures. Up to 1739, turnips were sown in Scotland only by two or three enterprising people—at least in the field. Like potatoes, they were at first regarded as luxuries, and grown only in small quantities in gardens. The first fields in Scotland that were sown with turnips and potatoes (towards the middle of the eighteenth century) were considered as curiosities, which people came miles to see!

The cultivation of the turnip supplied winter food for the cattle; and it was no longer necessary to kill the poor creatures at the approach of the cold season. The larger the number of cattle

a farmer possessed the greater was the quantity of manure he had for his fields, and the richer the crops which they yielded. In a very short time the land of those farmers who sowed turnips and other green crops yielded three times what it had done before. In the course of a few years men who had barely been able to support their families and pay their rents with the produce of their land, had cattle and corn in plenty to send to the market, and were beginning to make fortunes. There were, however, many farmers in Scotland too ignorant or too slothful to adopt the new system of agriculture; and it was not till the end of the century that it came into general practice.

Progress in Glasgow—The "Tobacco Lords"

In no place in Scotland was progress so rapid as in Glasgow. As we have seen, some of its enterprising citizens had been quick to take advantage of the opening for commerce with the American colonies which the Union afforded to the people of Scotland. The success of their ventures soon opened a market for all sorts of manufactured goods. The American colonists required many of the common articles in daily use, which they had not as yet the means of

manufacturing for themselves—glass and cutlery, hats and boots, needles and pins, furniture, wrought iron, sail-cloth, saddlery, books and paper. All these the Glasgow merchants sent out to them in their ships, that came back laden with tobacco.

At first, only about a fourth of the manufactured goods which were sent out to the American colonies were made in Glasgow; three-fourths of them were bought in other parts of Great Britain, so that the commerce of Glasgow was increasing the wealth of the whole country. Gradually, however, Glasgow people began to think that they ought to make the goods, which were to be exported to the colonies, themselves, and not allow the money which paid for them to go out of their own town. So new manufactures were started, one after the other.

In 1725 the manufacture of white linen was begun, with the help of workers from Holland and Ireland, and this soon became the chief industry of the town. But it was followed by many others. By the year 1760 there were established in Glasgow manufactories of thread, tape, ironmongery, saddlery, stockings (on frames), stoneware, copper-work, brushes, and carpets. The population had increased by more than a half of what it had been at the beginning of the century; and work had become so plentiful and

well paid that there was not a beggar to be seen in the town.

As the wealth of the town increased, the customs and ideas of the people changed. At the beginning of the century, they had lived very barely, and looked upon all amusements as sinful; after 1750 they began to pay more attention to their dress, their houses and furniture, and the buildings of the town; and places of public amusement were opened. It was then, too, that carriages were seen in the town for the first time; and that the shopkeepers began to sell one particular kind of thing, and not odds and ends of everything, as they used to do.

The merchants who had laid the foundation of the wealth of the town, were looked upon by their fellow-townsmen as very great men indeed. They were known as the "tobacco lords", because their money had been made by the import of tobacco. Dressed in scarlet cloaks, with cocked hats, powdered wigs, and gold-headed canes, they were permitted by the other citizens to have the sole use of "the plainstanes", or the pavement in the middle of the street fronting the Tron. We are told that, if a shopkeeper wanted to speak to one of those great men, he did not venture to address him, but stood in the gutter at the side of the street until he managed to catch the great man's eye.

Joseph Black and Modern Chemistry

While the "tobacco lords" were strutting on the "plainstanes" in all the splendour of scarlet cloaks and cocked hats, there was more than one modest, plainly dressed man in Glasgow, whose name was to be remembered centuries after theirs were forgotten.

During the fifty years which followed the Union, Glasgow was making progress in other departments as well as in commerce and manufactures. In 1740 a printing-press had been set up by two brothers, Robert and Andrew Foulis, from which there issued editions of the works of the great Greek and Latin authors, printed in a style that was remarkable at a much later time for its correctness and beauty. In 1753, the first circulating library in Glasgow was begun by John Smith, while about seven years earlier, the medical school may be said to have been founded in the ancient University by the celebrated Dr. Cullen, who was professor, first of medicine, and afterwards of chemistry.

Cullen was succeeded in 1756, as professor of chemistry, by a greater than himself—by Joseph Black, who has been called the founder of the modern science of chemistry. Though born in Bordeaux, Black was Scotch by parentage, and

as a youth studied first in Glasgow, and afterwards in Edinburgh, University.

Though he was only twenty-eight when he became professor of chemistry in Glasgow University (in 1756), he had already made the first of his great discoveries—the discovery of what he called "fixed air" in certain solid bodies, such as limestone. To understand the importance of this discovery, some explanation is required. We know that matter has *three states*, in either of which it may be found—(1) *solid*, like the ground on which we walk; (2) *liquid*, like the water we drink; or (3) *gaseous*, like the air we breathe. Up to the time of Black, the air of the atmosphere was supposed to be the only gas. When, therefore, in the course of his experiments, Black found a gas present in limestone, and other solid bodies of a similar nature, he named it "fixed air". This he did to denote that it was not free like the air, but fixed in the bodies (though it could be separated from them by heat), and that it resembled air in being invisible and elastic, though it differed from it in its other properties.

This discovery was the first step in a new departure for chemistry. It turned the attention of the chemists who succeeded Black to the subject of gases, and led, during his lifetime, to the discovery of oxygen and hydrogen, and other gases.

But it is perhaps as the founder of the theory of *latent heat* that Black is best known. We all know that a solid can be changed into a liquid, or a liquid into a gas—as, for instance, ice into water, or water into steam—by means of heat. Black observed that a great deal of the heat required to change solid into liquid, or liquid into gas, *seems to disappear*—that is, it is not apparent as increased warmth in the body on which it is acting. For example, more heat is required to convert water into steam than simply to make the water boil, yet steam is no hotter than boiling water. To the heat which is employed in converting solid into liquid, or liquid into gas, and yet is not perceptible by the touch or the thermometer, Black gave the name of *latent heat.*

In science, the theory of latent heat prepared the way for the modern doctrines of the nature of heat and light, while in the practical world, it may be said to have given rise to the steam-ship, and the railway, and the factory. Without it, Watt could not have reached the invention by which the steam-engine was perfected.

A third discovery of Black's—that of *specific heat*—has also had important results. It means that some substances require more heat to raise them to a certain temperature than others—as, for instance, gold requires more heat than water, and water more than mercury.

Adam Smith—the "Wealth of Nations"

While, in one class-room of Glasgow University, Joseph Black was explaining the properties of Matter, in another a no less famous man was lecturing on the nature of Mind. This was Adam Smith, the author of the *Wealth of Nations*.

Smith was some five years older than Black, but his great book did not appear till about twenty years after Black's discovery of "fixed air" was made known to scientific men. He was born in 1723 in the little town of Kirkcaldy in Fife. As a youth, he studied in the classes of Glasgow University, in which he afterwards (in 1751) became a professor. During the twelve years he held that office (till 1763, when he became travelling tutor to the young Duke of Buccleuch) he earned respect and fame as a lecturer and writer on moral philosophy, while at the same time, by his residence in a rising commercial city like Glasgow, he was gaining that interest in, and knowledge of, commercial questions which led him afterwards to write the great book, which has made him known all over the world.

If Joseph Black has a right to be called the founder of modern chemistry, Adam Smith can no less justly claim to be considered the founder of the modern science of political economy. Before

the time of Adam Smith, various writers had, at different times, discussed one or other of the questions with which the science is concerned; but the *Inquiry into the Nature and Causes of the Wealth of Nations*, which appeared in 1776, was the first attempt to gather them together, and treat them as a whole, and so to form a *system* or science of Political Economy.

The writer who did most to prepare the way for Smith's great work was his fellow-countryman David Hume, perhaps the greatest of Scottish thinkers. Hume, who was born at Edinburgh in 1711, was distinguished chiefly as a philosopher, but he was the author as well of a well-known *History of England*, and of a volume of *Political Essays*, which appeared in 1752 — twenty-four years before the *Wealth of Nations*. Among those are essays on "Commerce", "Interest", "Balance of Trade", and similar subjects, which contain thoughts and suggestions which Smith afterwards worked out more fully in his larger book. It is interesting to note in passing that Hume died in the year in which the *Wealth of Nations* appeared.

It is useless to attempt to give here an account of the doctrine contained in Adam Smith's great work; but one point may be mentioned. Before his time, it was generally considered that the wealth of a nation consisted of the gold and silver

coin which it possessed; and at different times laws were passed, both in this country and others, to prevent merchants from buying more goods from foreign nations than they sold to them, so that more coin might not go out of the country than came into it. Smith showed that the true source of all wealth was *labour*. "Labour was the first price, the original purchase-money that was paid for all things." The value of everything depends on the amount of labour which is required to produce it. Even the value of gold and silver depends ultimately on the amount of labour which is required to raise them from the mines.

CHAPTER VII

THE INDUSTRIAL REVOLUTION

About the time which we have now reached, there begins in Great Britain what has been called the Industrial Revolution. It might, perhaps, equally well be called the age of machinery. From that time onward for many years, it seems as if the brains of the people of the country were turned almost entirely to the invention of machines —machines for saving labour, or for increasing the output of manufactured goods.

For generations men and women had gone on doing their work in almost exactly the same way as their parents, and grandparents, and great-grandparents—spinning a single thread with a spinning-wheel, and weaving with a single shuttle on a hand-loom. For many spinners and weavers both in England and Scotland, it had been enough if they could supply their own families or villages, or at most their own country. As the spirit of commerce awoke among the people, there grew up the desire to be able to work faster, and to produce more manufactured goods.

For some years before the period we have reached, events had happened which very much

increased this desire. The conquests of Clive in India had brought a large, rich territory under British rule; and in 1760 the victory of General Wolfe had added Canada to the British dominions. These victories not only opened new markets for British manufactured goods, but they also stirred the imaginations of the people at home in various ways. Some were eager to go to this wonderful rich country in India, where fortunes could be picked up in a few months. Others turned their attention to improving the means of reaching the distant lands which now belonged to Great Britain; and this led to improvements in ship-building, and after a while to the invention of the steam-boat. A third class employed all their ingenuity in inventing machines to do the work of men, and to increase the supply of manufactured goods to meet the increased demand.

The first machines used in the manufacture of cloth were the invention of Englishmen; and as we are here dealing only with Scotchmen and Scotland, we shall merely mention those machines in passing. The first of these was the *spinning-jenny*, which was invented by a Lancashire weaver named Hargreaves, in 1767. The old spinning-wheel, which was always worked by the women of a household, could only spin one thread at a time, and that not very fine. Hargreaves's new machine, which he named a "jenny" after his wife,

could spin several threads at once, all of them finer than any his wife could spin in the old-fashioned way.

Two years later another Lancashire man, Arkwright, invented a spinning-machine superior to that of Hargreaves. He set up his machines near a river, on which he erected a water-mill, which turned several machines at once, so that he was able to produce in a short time as much yarn as it would have taken dozens of women a long time to spin with the old wheels.

A third Lancashire man, Crompton, made, ten years after Arkwright's invention was patented, a machine which was an improvement on those of Hargreaves and Arkwright. Crompton's *mule*, as he named his invention, helped to make the cotton trade of his native county one of the greatest industries of England.

These inventions, though not made by Scotchmen, were in course of time adopted in Scotland, and greatly increased the manufactures of that country.

Foundation of the Iron Trade—Development of Coal-Mining

No less important for the future manufactures of Scotland than the inventions of Hargreaves and Arkwright were the founding of the iron-

works on the little river Carron, near Falkirk, in 1760. Though ironstone had long been known to be abundant in Scotland, this was practically the first serious attempt which had been made to work it. In the old days the iron used in the country—chiefly in the form of weapons of war—was imported for the most part from Flanders, or carried off from England in one of the numerous Scottish raids.

Perhaps the chief obstacle to the progress of the iron manufacture, both in England and Scotland, was the fact that charcoal only could be used in the smelting-furnaces, while timber had become scarce in both countries. The success of the Carron Works, as the new foundry was called, was due in the first place to the discovery by the manager (Dr. Roebuck, an Englishman, who had studied medicine in Edinburgh University) that coal, when converted into coke, could be used for smelting iron.

In order to employ coke successfully in the furnaces, however, Dr. Roebuck found it necessary to have a much more powerful blowing-engine than had as yet been invented; and in 1768, when the great English engineer, Smeaton, was engaged on some public work in Scotland, he consulted him on the subject. Smeaton paid a visit to the Carron Works, and soon succeeded in constructing a blowing-engine powerful enough to permit

of coke being used in the furnaces in place of charcoal. Like the other machinery in the works the engine was turned by the water of the little river on which the foundry stood.

The blowing-engine secured the success of the Carron foundry, which soon became the most important iron-works in the kingdom, famous in particular for the manufacture of guns, and of a kind of cannon, now quite out of use, which were known as "carronades" from the name of the foundry.

Smeaton's invention, however, did more than make the Carron works successful. It marks an important stage in the progress of the iron trade all over the country; and it also helped largely to develop another important industry—coal-mining. Up to the time we have reached coal had been but little worked in Scotland. There was, indeed, no great demand for it, people preferring to burn wood or peats as long as they were to be had. Owing to the clumsy machinery in use at the pits, and the absence of good roads, coal was difficult both to raise and to transport; and there was, moreover, a heavy duty imposed on it by Government.

The employment of coal in the iron-furnaces, however, very much increased the demand for it; coal-mining became an active industry; new pits were opened; and engineers turned their atten-

tion to the improvement of the machinery used in them.

It shocks us very much to learn that the men, and even the women, who worked in the coal-mines at that time in Scotland still continued to be, as of old, little better than slaves. By a law passed by the Scottish Parliament in 1606, every man who once went to work in a coal-mine was bound to labour in it all his life as a "necessary servant". If he tried to run away, he was tried and punished as a thief; if the land was sold on which the coal-pit stood in which he worked, he was sold with it like any of the machinery of the pit. Worse than that, colliers sometimes bound over their infant children to their masters; and the children, when they grew up, were forced to labour in the pits without ever having the power of freeing themselves. The wages of a collier were good compared with those of other workmen at the time, and his master was bound to keep him in sickness and old age; but that did not make up for the loss of freedom.

In 1775 an act of Parliament was passed which set free most of the pit-workers; but it was not till the end of the century that this form of slavery was quite abolished.

The Beginning of Canals—Forth and Clyde Canal

It has been said that the absence of good roads did a great deal to hinder the progress of the coal trade. When the only means of carrying coals across country was in baskets on the backs of horses, the price of carriage was of course very high. Even in a town like Manchester, which is surrounded by coal-fields, we are told that up to 1761 it cost nine or ten shillings a ton for the carriage of coals only a few miles, while in winter it was often impossible to convey them into the town at all. In winter, in fact, Manchester was like a besieged town. Cut off from the surrounding country by impassable roads, no provisions could reach it, and the people often suffered great distress, especially from the want of fresh vegetables.

Necessity, it is said, is the mother of invention. The Duke of Bridgewater, who owned some coal-pits at Worsley, about ten miles from Manchester, was anxious to find some means of sending his coals into the town more quickly, cheaply, and regularly than could be done by the roads as they then were. He resolved to make a *canal*, or water-road, from his pits to Manchester. Having in 1759 obtained permission to do this by an act of Parliament, he engaged a millwright, named James Brindley, to carry out the work.

Brindley had been born of very poor parents, and had received no education; but he was a man of enormous ingenuity and perseverance. The work which he undertook was such as had never before been attempted in England, and it was full of difficulties. The canal had in some places to be carried from a lower to a higher level, and in one case across a river—the river Irwell. People laughed at Brindley, and told him he was attempting an impossibility; but he plodded on, putting all his brains to each new difficulty as it arose. The low ground was banked up to the level of the high ground; the river was crossed by an *aqueduct*, or water-tight bridge, along which the water of the canal passed from one side of the river to the other; and in July, 1761, the first boat-load of coals was floated from the duke's pits to Manchester. From that time onward the people of Manchester were regularly and cheaply supplied with coals.

The success of the first canal in England led, during the next twenty or thirty years, to the making of many others. In Scotland people were not slow to see what an advantage it would be to the country if Edinburgh and Glasgow could be connected by a canal joining the rivers of Forth and Clyde, on which the towns are respectively situated.

In 1764 Smeaton, the engineer who invented

the blowing-engine for the Carron Works, was consulted about making a canal between the Forth and Clyde; and in 1768 an act of Parliament was obtained, and the work was begun. It was no easy task. The canal is thirty-eight miles long, the ground over which it passes rises one hundred and fifty-six feet; and it crosses several roads and two rivers. These difficulties did not prevent the progress of the work, which, however, was after a while brought to a stand-still by the want of the money necessary to complete it. Although everyone felt how important it was for the trade of the country that vessels should be able to pass right across it from sea to sea, and although the sum required to complete the canal was not very large, according to our present notions, twenty years passed before it could be raised and the work could be completed. It was not till 1790 that the Forth and Clyde Canal was at length formally opened amid great rejoicings, the chairman of the company who had started the work floating into the Clyde a barrel containing water from the Forth.

Andrew Meikle and the Thrashing-Machine

If it was in England that the industrial revolution may be said to have begun by the invention

of spinning-machines, it is to a Scotchman that the honour is due of having invented the first really successful machine for thrashing corn.

Tools of all kinds were, at the time of which we are speaking, very bad; and those used in agriculture were perhaps the worst. As has been said in a former chapter, the farmer often himself made the rough tools he used in his work. At a time when iron was but little worked in the country, many tools which are now made of iron were made entirely of wood. Even the plough, a clumsy implement, which required eight or even ten oxen to draw it, was made chiefly of wood, its various parts being kept together by wooden pins instead of nails. As for the harrow, Lord Kames, a Scottish judge of the period, who devoted much attention to husbandry, said of it that it was "more fitted to raise laughter than to raise soil". Corn was separated from the straw by being whipped or thrashed with a flail—a sort of scourge or beater wielded by a single man. This was, of course, a very slow method. A quicker one, which was in practice in the beginning of the eighteenth century, was to set fire to sheaves of corn as they came from the field, burning the straw and leaving the grain!

From about the middle of the century onwards, many attempts were made to construct a machine which would separate the corn from the chaff more

quickly than could be done by a flail; but it was not till 1787 that Andrew Meikle succeeded in erecting a machine that was to prove of lasting benefit to the farmer.

Andrew Meikle was the son of James Meikle, who had set up the first barley-mill in Scotland. Like his father, Andrew was a millwright, and owned a small farm, as well as a mill, in East Lothian. His attention was first turned to the subject of a thrashing-machine by seeing an unsuccessful model of one made by a neighbour; but it was not till after many years of pondering on it, that he succeeded in inventing a machine that fulfilled satisfactorily the required purpose.

We are told that at the time that Meikle at last reached the idea, which he afterwards carried out, he was engaged on some work connected with a mill at Leith; and used to walk there and back—a distance of forty miles—in one day. It was while on this long walk that the idea suddenly flashed upon him; and he at once drew a plan of his future machine on the road, exclaiming, "I have got it! I have got it!"

The machine, which was afterwards constructed, consisted of a cylinder, with many scutchers, or beaters, attached to it, which was made to revolve quickly, and in doing so beat off the grain from the ears of corn as the sheaves were fed into it by hand. It could be worked by

water, or wind, or horses; and could thrash and clean from seventy to eighty bushels of oats in an hour. The saving both of labour and money which it effected was very great; and farmers were not slow to see the advantage of possessing such a machine. In twenty years after Meikle had taken out a patent for his invention, there were no fewer than three hundred and fifty thrashing-mills at work in East Lothian alone; and soon afterwards they came into use all over England, and indeed in every part of the world.

In spite of the immense success of his invention, Meikle did not become rich. It was others who reaped the advantage of his toil and thought, and even denied him the credit of what he had done. When he was growing old, some friends had to raise a subscription to provide for the wants of the man whose invention was the means of saving millions to the farmers of Great Britain.

James Watt and the Steam-Engine

The spinning-machines of Arkwright and Crompton, as well as the blowing-engine of Smeaton, and the thrashing-mill of Meikle, were, as we have seen, worked by water; but a new power was soon to take the place of water in the working of machinery — namely, steam. Long before Meikle had set up his first thrashing-

machine, and even before Smeaton had erected his blowing-engine by the little river Carron, James Watt in Glasgow had reached the idea which was to make steam of practical use as a motive power.

Watt is generally called the inventor of the steam-engine; but this he cannot in strict truth claim to be. Even before his time, an engine worked by steam, and known as the Newcomen engine from the name of its inventor, was in use for pumping water out of mines. It was, however, very imperfect and of very little real use until Watt, by his invention, improved it so much as to give it almost the whole practical value it has possessed since his time.

Born in Greenock in 1736, Watt had been carrying on business in Glasgow for some years as a maker of mathematical instruments, when, in 1764, a Newcomen engine was brought to him for repair; and his thoughts were thus turned to the subject, which ever since has been associated with him.

To understand the value of Watt's invention we must first have some idea of how an engine works. In an engine, the different wheels and levers are set in motion by means of a piston, or rod, which is kept constantly moving up and down in a cylinder. Now, it was easy to force the piston *up* by letting steam into the under

part of the cylinder; but it was not so easy to see how to thrust the piston *down* again when the cylinder was full of steam. Newcomen emptied the cylinder by *condensing* the steam, or cooling it again to water, and the piston was then forced down by the weight of the air on the outside.

But in condensing the steam the cylinder was cooled, and had to be heated again before the steam could force up the piston a second time. So there was a loss of time after every stroke of the piston, and also a waste of fuel. Watt set himself to find out *how to condense the steam without cooling the cylinder.*

Simple though his solution of the difficulty may seem to us, when it is told us, it was not till after much thought that he at length reached it. It was this: to prevent the cylinder from being cooled by the condensing of the steam, the steam must be condensed in a separate vessel. There must be a *separate condenser.*

Even after this idea occurred to Watt, it was long before he could carry it out. The smiths whom he had to employ to make his model engine, did not work as correctly as workmen of the present day would do; and often he was driven to despair by finding that the different parts of the engine would not fit together.

Year after year he toiled amid endless difficulties, gathering debts that weighed heavily on

his mind, and suffering constantly from acute headaches and low spirits. At last he was lucky enough to find a good friend in Matthew Boulton, the owner of a great factory at Birmingham, who undertook to pay the expenses of building the new engine in return for a share in the profits of it.

At Birmingham Watt found better workmen than in Glasgow; and eleven years after the day when the idea of the separate condenser first occurred to him, he had the pleasure of seeing his first engine blowing the bellows in an iron-work. A few years later it was set to grind corn, to saw timber, to coin money, and to drive looms and spindles.

Watt lived till he was eighty-three; and it is pleasant to learn that "he enjoyed life in his old age as he had never done in his youth".

CHAPTER VIII

STATE OF SCOTLAND AT THE END OF THE EIGHTEENTH CENTURY

When we compare the condition of Scotland in the middle and the end of the eighteenth century, we are surprised to find what great progress had been made in fifty years. In 1750, though a few land-owners had begun to introduce improvements in the management of their land, agriculture was still in a very backward state all over the country. By the end of the century land was better cultivated in the Lowlands of Scotland than in any part of Great Britain. In the middle of the eighteenth century, Scotch farmers who wished to improve their land brought labourers from England, or sent their sons there to learn the new methods of agriculture, while by the beginning of the nineteenth century, Englishmen came to Scotland to learn from the farmers in the Lothians.

It was not only in agriculture that the people of Scotland advanced during the last fifty years of the eighteenth century. During that time, roads had been made, canals had been dug, and manufactures of all sorts established. Many un-

important villages had grown into busy little towns, the centres of active industry. Before the end of the century, Hawick and the border towns had become important centres of the woollen manufacture, which was carried on as well in many other parts of the country, while in Kilmarnock the weaving of carpets, begun about 1777, had grown into a prosperous industry, employing many workers.

The Deepening of the Clyde

The rapidly growing commerce of Glasgow forced its citizens, soon after the middle of the century, to undertake an important public work, which perhaps more than anything else helped to make the town the great commercial city which it has since become. Nowadays, when we watch the huge Atlantic liners steaming up the Clyde to Glasgow, it seems impossible to believe that, a hundred and fifty years ago, the river, for many miles below the town, was so shallow that it was almost impossible for even the smallest vessel to sail up to its quays. As we have seen in an earlier chapter, however, it was the shallowness of the Clyde at Glasgow which induced the magistrates of the town to make a harbour some twenty miles lower down the river.

As the commerce of the town increased, it was

found very inconvenient to unship the goods intended for Glasgow so many miles away, and merchants were eager that their vessels should be able to sail up to the town.

Various engineers, amongst others Smeaton, the inventor of the blowing-engine, were consulted as to the possibility of deepening the river Clyde; and at length, in 1769, an English engineer named Golbourne undertook to deepen it enough to carry vessels drawing six to seven feet of water. The plan he adopted was to *narrow* the channel of the river by means of jetties or dykes, for at that time its shores were so flat that the tide spread over a very large surface, forming pools and islands. So well did this plan succeed that, in January 1775, vessels drawing six feet of water were able, at high tide, to come up to the Broomielaw, as the quay at Glasgow is called.

Even after Golbourne's work, however, the river at low water was only some fifteen inches deep at Glasgow; and in the early part of the nineteenth century boys could wade across it. The labours of a succession of clever engineers since Golbourne—amongst them Rennie, of whom we shall see something further on—have increased the depth of the river to more than twenty feet at low water, so that now we can see—

> "The mighty ocean liners, outward bound,
> Heave o'er the spot where windmill sails went round".

Outbreak of the American War—Glasgow and the Cotton Trade

In the very year when, for the first time, a vessel drawing six feet of water sailed up to the quay at Glasgow, a war broke out between Great Britain and her American colonies, which threatened to ruin the commerce of the Scottish city. As we have seen, it was chiefly by importing tobacco from the American colonies, and afterwards shipping it to the various countries of Europe, that the Glasgow merchants had grown rich and prosperous; and the war closed the ports of the colonies to all vessels from the mother-country.

Even before the outbreak of the war, during the years when the disputes were going on which led to it, the commerce of Glasgow and other British towns had suffered a great deal. The British Government had claimed the right to impose taxes on the colonies. This right the colonies denied; and when it was insisted on, they refused not only to pay the taxes imposed, but also to import British manufactures, or to export anything to Britain. Such a state of things, of course, meant the loss to British merchants of an important market.

The energy and enterprise of the Glasgow merchants, however, were not to be crushed by

the closing of one market, however important, to their commerce, When the war for a while put a stop to their trade with the American colonies, they turned their attention in other directions. It was now that they exerted themselves to increase their trade with London and the rest of England. It was now that their agents were to be found pushing their way in every country of Europe. It was now that new manufactures of every sort sprang up in the city and its neighbourhood, and especially the manufacture of cotton.

Cotton, as we know, could not, like flax and wool, be grown in Scotland, so that the manufacture of cotton began later in the country than those of linen or woollen goods. Soon after the outbreak of the American war, the merchants of Glasgow began to import raw cotton from the West Indies; and in 1778 the first cotton-mills in Scotland were set up at Rothesay, in the island of Bute. They were soon followed by others in various places, and especially in Glasgow and the counties round it, where the manufacture of cotton, and particularly of muslins, became in course of time the chief industry, employing large numbers of workers.

The year 1783 — the year in which Britain had to own herself beaten in her struggle with her colonies, and to acknowledge the inde-

pendence of the newly-formed United States of America — is rather an important date in the history of Glasgow. It was in that year that the newspaper was started which is now known as the *Herald*, and is one of the most popular in Scotland. It was at first called the *Advertiser*, and appeared only twice a week. Its first number contained the preliminaries of the peace with America. In the same year the merchants and manufacturers of the city founded the Chamber of Commerce, a society for the protection and encouragement of trade. Another event, less important, but not less interesting, belongs to the same year. It was in 1783, we are told, that umbrellas — made of glazed linen in brilliant colours — first began to make their appearance in Glasgow!

The conclusion of the peace with America reopened the ports of the new state to Glasgow commerce; but the glory of the "tobacco lords" had passed away. The tobacco trade never became what it had been before the war; but other industries sprang up in its place. The southern states of America furnished large quantities of raw cotton to the rapidly increasing mills of Scotland; and the deepening of the Clyde prepared the way for what was in future to be the greatest glory of Glasgow—her shipbuilding trade.

Scottish Literature at the end of the Century—Robert Burns

It was towards the end of the eighteenth century, when Scotland was making such rapid progress in wealth, commerce, and manufactures, that her greatest poet made his appearance.

Like many other great men, Robert Burns began life in humble surroundings. Born in 1759 at Alloway, near Ayr, in a small clay cottage built by his father, the future poet was early accustomed to hard manual toil, and to the daily struggle with poverty and want. It is to the credit of his father, however, that, in spite of constant poverty, he contrived to give his sons an education which, though only elementary, was superior to any usually received by boys of their class at that time. Later, when acting as a labourer on his father's small farm, Robert carried on his education by reading, in his spare hours, every book he could lay hands on.

When he was little more than a boy he had begun occasionally to compose verses; and in 1786, when he was only twenty-seven, he published his first volume of poems, among which were many of those which are still read and recited, with admiration and even with reverence, all over the world, wherever Scotsmen are to be found. There was "The Cottar's Saturday

Night"—that touching picture of Scottish peasant home-life, such as the poet had been familiar with all his days. There was "The Vision", the verses "To a Mouse", and those "To a Mountain Daisy"—the two last suggested to him by turning up a field-mouse's nest and crushing a daisy when he was ploughing. The poem "To a Mouse" contains four lines which have been quoted as often as any that ever were written:

> "The best-laid schemes o' mice and men
> Gang aft agley,
> And leave us nought but grief and pain
> For promised joy".

Three lines, no less often quoted than these, occur in another poem in the volume, addressed to another and smaller creature than the mouse:

> "O, wad some Pow'r the giftie gie us,
> To see oursels as others see us!
> It wad frae monie a blunder free us."

Almost as soon as they appeared the poems became popular. The homeliness of the subjects they dealt with, the simplicity of the style in which they were written, the *truth* and variety of the feelings and thoughts they expressed, made them go straight to the hearts of the readers, as they came straight from the heart of the writer. As Thomas Carlyle has said:

"Burns has found in his songs a tone and words for every mood of man's heart".

Soon after his first volume was published Burns went to Edinburgh, riding all the way (about sixty miles) on a pony, there being neither train nor coach in those days by which he could travel. After spending some months in the capital, where the new poet was much flattered and made of, he made a tour through a part of his own country, and in 1788 settled down with his wife on a farm, called Ellisland, near Dumfries. The farm did not succeed, however, and in 1791 he removed to the town of Dumfries, where he carried on the calling of an excise-man till 1796, when he died at the age of thirty-seven.

While at Ellisland and Dumfries he had continued to write poems, and in 1793 he had published a volume containing what is generally considered to be his greatest work — "Tam o' Shanter". It is by his songs, however,—the songs which he generally composed to suit some old Scottish air — that Burns will no doubt be longest remembered. As long as there are Scotsmen or Scotswomen in the world, "Scots wha hae", "Ye Banks and Braes", "Auld Lang Syne", "John Anderson, my jo", and his many other world-famous songs will keep alive the memory of the Ayrshire Ploughman.

Scottish Art at the end of the Century —Sir Henry Raeburn

Among the many claims of Scotland to the pride and admiration of her sons and daughters, few are stronger than the fact that, in the short space of three years she gave birth to a poet and a painter of the first rank. Only three years before her greatest poet saw the light in the west of the country, her greatest painter was born in the east (in 1756).

The honour of being the birthplace of Henry Raeburn belongs to what is now a populous part of the city of Edinburgh, though one hundred and fifty years ago it was quite outside the town. His father, who was a manufacturer, died when Henry was quite a child, as did also his mother; but his brother, who was many years his senior, seems to have done his best to fill the place of parents to the little orphan.

About the age of fifteen Henry was apprenticed to a jeweller in Edinburgh; and, without ever having had a lesson in painting, began to spend much of his leisure time in painting miniatures of his friends. His master was so much struck by the artistic talent which the boy showed, both in his work as a jeweller and in his miniatures, that he introduced him to David Martin, who

was at that time the chief portrait-painter in Edinburgh.

Martin was by no means a great painter. Indeed, no artist of the first class had as yet arisen in Scotland. The country was too poor to offer much encouragement to art. Few people in Scotland could afford to buy pictures; and there were but scant means of instruction in art for a poor young man. There was no School of Art, no Royal Scottish Academy, no great yearly exhibition of paintings. Almost every Scottish artist of any importance went to London to find a market for his work. Perhaps the most important living at the time was Allan Ramsay (son of the poet of the same name), who had settled in London, and in 1767 was appointed portrait-painter to George the Third.

Raeburn's meeting with Martin was the most important event which had as yet taken place in the future artist's life. The sight of the other's portraits aroused in the young man the desire to do work of the same sort; and he soon began to paint life-size portraits in oils, as well as miniatures. In a short time he became known in his native city as a portrait-painter, and was able to give up the painting of miniatures altogether. By the time he was twenty-two he had become almost rich by his work; and his marriage with a beautiful young widow,

Countess Leslie, brought him a considerable fortune.

He might now have given up painting, or have continued to paint as he was doing; but he was anxious to improve his art by studying the pictures of the great masters in Italy. He therefore went to Rome, where he spent two years in constant work and study of the best paintings, returning to Edinburgh in 1787. It is interesting to note that this was the year after Burns's first volume of poems had appeared, and the new poet had been fêted and made much of in the capital.

The artist had now reached his full powers, and for nearly forty years (till 1823, when he died) he continued to paint constantly and regularly, producing works which are remarkable even for their mere number. When, in 1876, an exhibition of his pictures was held in Edinburgh, there were no fewer than three hundred and twenty-five exhibited; and even this large number does not include all the works that came from his brush. But Raeburn's portraits are even more remarkable for their excellence than for their number. Born in a country in which, at the time, art was scarcely practised, and without any teaching, Raeburn raised himself to a place among the greatest portrait-painters of the world. Even from the first, before he went to

Rome, his portraits showed that quality, which is characteristic of the highest work of art—they were lifelike, real, and full of character.

During his long period of work Raeburn painted portraits of nearly all the distinguished Scotsmen of the day. His last work was a portrait of the great novelist, Sir Walter Scott, which was finished only a few days before the artist's death. In the previous year (1822) George the Fourth had conferred on him the honour of knighthood on the occasion of a visit to Edinburgh.

Outbreak of War with France—The Volunteer Movement

While Burns was still living, and Raeburn was at work on his famous portraits, there broke out a war between Great Britain and France, which lasted for many years, and threatened to put an end to the growing prosperity of our country.

In 1789 there had begun one of the most remarkable events in history — the French Revolution. For centuries the poorer classes in France had suffered great wrongs at the hands of king and nobles. So heavy was the burden of taxes imposed upon them to keep up the king's court, the fleet, and the army that, in

many districts, the labouring classes were at times reduced almost to starvation in order to pay them. At length they rose against their oppressors. The Revolution began with the storming of the Bastille, the state prison of France. The mob of Paris dragged cannon before the walls of this grim fortress, burst open the gates, and put the governor to death.

At first the people of Great Britain were inclined to sympathize with the revolutionary party in France; but soon the quiet common sense of the British was shocked by the violence with which the revolution was carried on. When the King of France was put to death by his subjects, among hundreds of other people, innocent as well as guilty, a feeling of horror spread through Great Britain, and the people were eager for war with France.

In 1793 war was declared against France by Britain, as well as by most of the European powers. At first the French were everywhere victorious. Spain, Sweden, and Prussia were soon eager to make peace with her. Pitt, the Prime Minister of Great Britain, would have been glad to make peace too, but against his judgment he was forced to yield to the wish of the country. The people at that time were wild with hatred of France and terror of invasion.

So for years the war went on, British troops

were shipped to the Continent, and large sums of British gold, raised by taxing the people, were sent to other nations to enable them to keep their armies in the field against France. At home, companies of volunteers were being rapidly formed all over the country to be ready to defend it, in the absence of regular troops, if the French should succeed in landing an army on our shores.

It was a time of feverish excitement, military zeal, and panic. Women hushed their crying children by telling them that the French were coming. Men of every class, who had never handled a musket in their lives—labourers, and artisans, and shopkeepers, and clerks, and members of the learned professions—rushed to enroll themselves in one or other of the newly-formed companies of volunteers. All over the country sergeants were drilling those new recruits, who were often awkward and even comical in appearance.

Even the poet Burns did not escape the war fever which was raging in the country. When, in 1795, two companies of volunteers were raised in Dumfries, he hastened to enroll himself among them. A contemporary of Burns's has given a somewhat comical picture of the poet attired in his uniform, which consisted of white breeches and waistcoat, short blue coat faced with red, and a bearskin. With this brilliant attire, the poet's

unmilitary stoop, and awkwardness in handling his arms, contrasted rather oddly.

More inspiring than his own example was the song which he composed at this time. We are told that "hills echoed with it; it was heard in every street"; for it expressed the feeling in the hearts of the people.

"Does haughty Gaul invasion threat?
Then let the loons beware, sir;
There's wooden walls upon our seas.
And volunteers on shore, sir.
The Nith shall run to Corsincon,
And Criffel sink in Solway,
Ere we permit a foreign foe
On British ground to rally!"

CHAPTER IX

BEGINNING OF THE NINETEENTH CENTURY

Napoleon Bonaparte and British Commerce

At the beginning of the nineteenth century the history of every country of Europe gathers round the name of Napoleon Bonaparte, the greatest general of his time. At the time when Burns wrote the song quoted in last chapter, Bonaparte was a young officer in the army of the new French republic. By the beginning of the nineteenth century, he had raised himself by his military genius to the head, not only of the army, but of the government, of France.

Not content with ruling France, Napoleon aimed at conquering all Europe; and he all but succeeded. One after another he defeated the armies of the countries of Europe. Italy, Austria, Germany, Spain, were each in their turn subdued by him. For years he was victorious everywhere; for years he was the terror of every European nation. The only power which offered any real check to his wonderful career of victory was the British navy.

In 1805, when he had become Emperor of France, he formed a plan to land a French army on the shores of Britain. Had he succeeded in doing so, the newly-formed companies of volunteers could have offered but a feeble resistance to the French troops, trained by their great general in many a brilliant campaign. The French, however, made no actual attempt to set foot on our island; and any such attempt became hopeless after our fleet, under the command of the great admiral, Lord Nelson, met and defeated the French fleet in one of the most important sea-fights ever fought—the battle of Trafalgar.

Disappointed in his plan of invading the country, Napoleon next attempted to starve both the trade and the people of Great Britain by issuing his famous Berlin Decrees, which closed the ports of Europe to British vessels. No British goods were to be sold in any European port; no corn was to be shipped from Europe to Britain.

But for the improved methods of agriculture and cattle-feeding, which began to be adopted about the middle of the eighteenth century, it would perhaps have been impossible for Great Britain to have held out, as she did, for more than twenty years against the overwhelming power of France. At the beginning of the nineteenth century farmers in England and Scotland had to supply food for the populations of the towns,

which were increasing every day with the growth of manufactures. During the latter half of the eighteenth century, an English farmer named Bakewell had introduced a system of rearing cattle and sheep by which the animals were rendered more suitable for food. Fortunately, this system was generally adopted by farmers throughout the country; and thus the supply of butcher's meat was enormously increased just at a time when the growth of the population demanded an increased supply of food.

In the long war with France, which ended with the great British victory at Waterloo in 1815, the glory of having broken the power of the greatest general of his time rests first with the British navy and its admiral, Lord Nelson; and afterwards with the British army and its general, the Duke of Wellington. We must not forget, however, the large part which the farmer and the cattle-breeder, Bakewell, and the turnip played in enabling our forefathers to withstand, and in the end subdue, the great Napoleon.

Scotsmen and the Colonies

Even the long war with France did not put a stop to the remarkable progress which, at the close of the eighteenth century, Scotland was making in almost every department—in agriculture, in com-

merce and manufactures, in social manners and customs, and in literature.

The wealth of the country was much increased, not only by the progress of commerce and manufactures, but by the return to their own land of Scotsmen who had made fortunes in the colonies of Great Britain.

Whether because of the poverty of their country, or of a natural restless love of adventure, Scotsmen have always been given to wandering. Long before the period which we have reached, an English poet expressed this tendency on the part of the Scot in the following lines:—

> "Had Cain been Scot, God had reversed his doom,
> Not forced him wander, but confined him home".

During the eighteenth century, many causes helped to induce Scotchmen to emigrate. As we have seen, the country at the beginning of the century was so miserably poor, the trade so small, and the manufactures so few, that there was really no work for the young men to do when they grew up to man's estate. The idle and lazy stayed at home and picked up a bare livelihood in some overcrowded trade or calling; while the young men of spirit left the country to seek their fortune elsewhere.

When the union with England threw open the English colonies to Scotchmen, many made their

way to America and the West Indies, where some made fortunes, and others met their death. Jamaica, in particular, was called "the grave of the Scot", because so many Scotchmen died there of the fever of the country. After the conquests of Clive in India, large numbers of Scotchmen were drawn thither by the stories of the great wealth of the large new territory which had come under British rule.

Later in the eighteenth century, another cause which led many people to emigrate from Scotland was the gradual doing away with small crofts, or farms. As land-owners turned their attention more to agriculture and farming, they found it more profitable not to cut the land up into small holdings, but rather to throw these small holdings together into large farms. In accordance with the new methods of rearing cattle and sheep, which were coming into practice towards the end of the century, large districts were required for pasturage.

The employment of the new methods of farming, therefore, while they very much increased the yield of the land, and the wealth of the country, drove many small farmers out of their homes. In the north, we are told that sometimes as many as a hundred families had to leave their little farms to make way for a sheep-walk. Sometimes, at first, the people refused to leave their homes,

miserably poor though they were; and sometimes there were riots; but in the end they were forced to submit. Some found employment in the new manufactories in the towns, while many families emigrated to the colonies.

In the course of a few years, many of the Scotchmen who had gone to America, and especially to India, were able to return home with large fortunes. Many poor young men—sons of farmers, or gamekeepers, or even labourers—who had gone to India in the latter half of the eighteenth century, came back, rich and elderly, at the end of it, or the beginning of the next. With the fortunes they had made they bought large estates in Scotland, thus increasing the value of the land and the wealth of the country. At the beginning of the nineteenth century, a considerable part of the landed property of Scotland had thus been bought by retired Indians.

Scottish Literature at the Beginning of the Nineteenth Century—Sir Walter Scott

It was not many years after the death of the greatest poet of Scotland (in 1796) that her greatest novelist appeared. Born in Edinburgh in 1771, Walter Scott was a young man of twenty-five when Burns died. It was not till some years

later, however, that the first of his novels was published. His father was a lawyer, and Walter also had adopted law as his profession, becoming an advocate when he was about twenty-one. Like the other young men of the time, he was fired by the military zeal which the fear of French invasion inspired, and became an eager volunteer.

In 1805—the year when Napoleon made his preparations to invade Britain, and Nelson won the great battle of Trafalgar—Scott's first important work appeared. It was not a novel, but a poem — *The Lay of the Last Minstrel.* It at once became extremely popular; and when, in the next five years, it was followed by two other works of the same sort, *Marmion* and *The Lady of the Lake*, Scott was regarded as a great poet.

In our own days, however, it is not as a poet that he is chiefly admired. As a poet, he must be ranked far below Burns. He had not the power, which the Ayrshire ploughman possessed in so high a degree, of touching the heart, of expressing our strongest feelings in simple musical language. The qualities which we admire in *Marmion* and *The Lady of the Lake* are the same as those which Scott afterwards showed, in higher perfection, in his novels. These are the power of telling a story, of calling up before his readers'

minds times long past, and events which have never happened, of interesting them in the characters and fortunes of people who have never lived. *Marmion* and *The Lady of the Lake* are both tales in verse, each dealing with events and characters in Scottish history.

From his early boyhood, Scott had been deeply interested in the romantic history of his country; and many of his novels, as well as his poems, afford proof of his knowledge of the subject. *Waverley*, the first of his novels (published in 1814), is a tale of the rebellion of '45, and the Young Pretender, Charles Edward, is one of the characters in it. Another one, *Rob Roy*, has for its hero the daring Highland robber, who has been mentioned in a former chapter. In *The Abbot*, the unfortunate Queen Mary of Scotland is made to live again; and in *The Fortunes of Nigel*, there is a lifelike portrait of her son, James the First of England.

Scott, however, did not restrict himself to Scottish history, or to historical personages. Some of his novels, such as *Kenilworth* and *Woodstock*, deal with events in English history, and one, *Quentin Durward*, with French history in the fifteenth century. Though, too, the portraits of historical people, which occur in some of the novels, are often interesting and ably drawn, it is the imaginary characters — the men and

women whom, so to speak, he created — who afford the best proof of the genius of the novelist.

From the very first, *Waverley* was universally admired and appreciated; and each of the author's succeeding novels was eagerly read by thousands of people, not only in Great Britain, but on the Continent. Even before any of his novels were published, the sale of his poems had enabled Scott, in 1811, to buy a small estate near Melrose, to which he gave the name of Abbotsford; and in 1820, George the Fourth conferred on him a baronetcy.

Unfortunately, the novelist's prosperity did not last. In 1826, by the failure of the publishing firm in which he had become a partner, he found himself suddenly not only without a fortune, but very heavily in debt. He was no longer young; but he set himself bravely to work to pay off the debt, and had almost succeeded when, in 1831, he was struck with paralysis. He died at Abbotsford in 1832.

Edinburgh in the Time of Scott

At the time when Sir Walter Scott was delighting the world with his romances, changes were taking place in his native town, which were gradually converting the ancient capital of Scotland into the modern city which it is to-day.

Even before the days of Scott, the city had changed considerably from what it used to be in the previous century. Since about 1760, several wide, straight streets of regular stone houses—amongst others, the modern chief street, Princes Street—had risen up on the north side of the deep hollow, which lies at the foot of the Castle rock, and formed what was known as the New Town. To the New Town most of the richer people had removed from their old homes in the neighbourhood of the Canongate, which was gradually given up to the poorer classes.

The new streets and buildings did not at first show much good taste. After the close of the war with France, however, when Scottish people began to travel in Europe, and visit the celebrated buildings of other cities and countries, they brought home to Scotland a new interest in architecture, and a new desire to improve the capital of their country. A writer who lived at the time tells us that, during the first ten years after the close of the war, there were more schemes for the improvement of Edinburgh than there had been for a hundred and fifty years before. It was about this time that some patriotic Scotsmen raised £20,000 to build a National Monument, which, though unfinished for want of sufficient funds, forms a conspicuous object on the Calton Hill to-day.

The new buildings were not the only proof that there was a new life and spirit awaking in Edinburgh. In 1802, the *Edinburgh Review*, a journal remarkable at the time it appeared for its modern spirit, and the freedom with which all sorts of questions were discussed, was founded by a group of eager, energetic young men, of whom Francis Jeffrey (afterwards Lord Jeffrey) was the leader. The foundation, in 1817, of *The Scotsman* newspaper and *Blackwood's Magazine*, which are still the most popular publications of their class in Edinburgh to-day, seems to bring the period we have reached much nearer to the present time.

It was in the same year (1817) that a police force was introduced into Edinburgh. Up to that time, the only guardians of law and order in the city consisted of the City Guard, some two hundred discharged soldiers, "hard-featured, red-nosed veterans", the youngest of whom was about sixty. They were dressed in red uniform, with long black gaiters, and cocked hats, and they carried Lochaber axes. They seem to have been remarkable chiefly for their quick tempers and their fondness for whisky; and they were hated by the townspeople (especially the little boys), who called them "The Toon Rottens" (Town Rats).

The disappearance of these well-known figures

from its streets must have made a great difference in Edinburgh. Other scarcely less conspicuous figures, the water-carriers, disappeared soon after them. It strikes us with surprise to learn that, up to 1818, all the water used in the houses in Edinburgh was carried in from wells in the streets by old men and women, who earned their livelihood in that way. One of the common sights in the town, before 1818, was to see a crowd of these "water caddies", as they were called, gathered round a well in the morning, sitting on the little barrels in which they carried the water, while they waited their turn to draw, the men generally wearing old red coats, while the women were clad in "duffle" greatcoats, and black hats like the men's.

CHAPTER X

PROGRESS OF ENGINEERING

The Beginning of Steamboats

Hitherto we have traced the progress of Scotland from an industrial condition far behind other civilized countries to a position abreast of them in commerce and manufactures. At the point which we have now reached, she takes the lead in a new enterprise, which has had the greatest possible effect in promoting not only her own commerce but that of all the world. As it was a Scot (James Watt) who made the steam-engine of practical use to mankind, so it was a Scot who first successfully employed it to propel vessels on the water.

It has been said that "there is nothing new but what has once been old"—that every new invention has been made before, and then forgotten, along with the name of the first inventor. We know, at any rate, that attempts were made to employ steam in navigation by a Spaniard in the sixteenth, and by a Frenchman and an Englishman early in the eighteenth century. Neverthe-

WILLIAM SYMINGTON

PIONEER OF STEAM NAVIGATION

From an engraving after the painting by D. O. Hill, R.S.A.

less, Scotland can justly claim the honour of being the birthplace of the steam-boat; for it was in Scotland that it was first brought to practical perfection through the ingenuity, the labour, and the perseverance of more than one Scotsman.

The first of these, Patrick Miller, the "laird" of Dalswinton in Dumfriesshire, Burns's landlord when the poet lived at Ellisland, began making experiments in driving vessels by steam on the loch of Dalswinton in 1788, and a little later secured the help of a young mechanic, named Symington.

A little model steam-vessel, designed by Miller, used to be seen about 1793 paddling on the Thames at London; but it attracted little or no attention; and its inventor, who had spent much time and money in carrying on his experiments, died without receiving the recognition which his important services to mankind undoubtedly deserved.

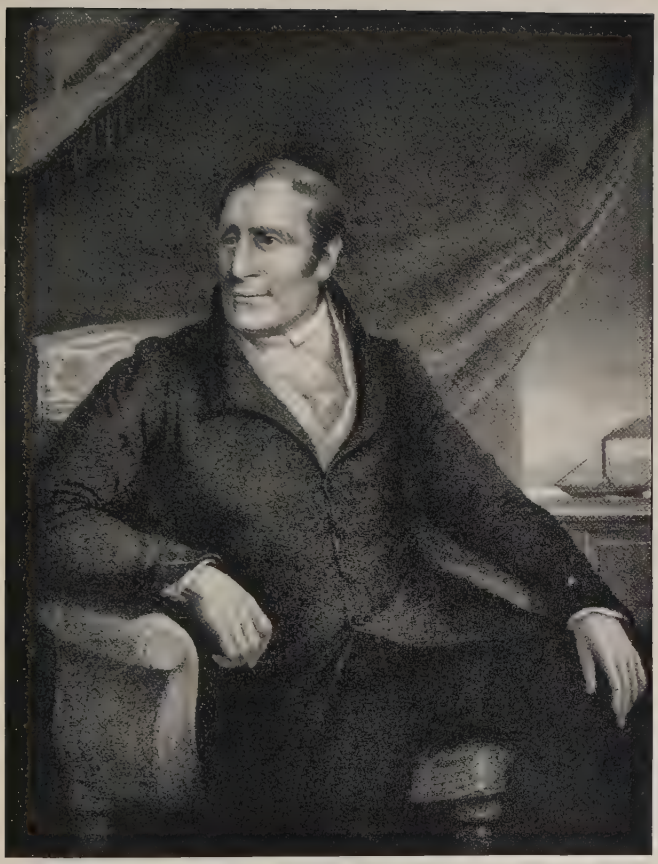
His assistant, Symington, has the credit of having constructed "the first practical steam-boat". Built about 1801 at the orders of Lord Dundas, this vessel was named the *Charlotte Dundas*, and plied for a while on the Forth and Clyde Canal until the directors of the canal put a stop to it, fearing that the wash of the water from the paddles would injure the banks of the canal. Symington died poor and unsuccessful,

though the Government gave him a grant of £100, and afterwards of £50, as a reward for his invention.

It remained for a third Scotchman, Henry Bell, to make the steam-boat a practical success, and turn it to profitable account. Bell was a builder in Glasgow, but had previously worked as a millwright and engineer, and owned a bath-house and hotel at Helensburgh, which is situated on the Clyde twenty-four miles below Glasgow. It was with a view to conveying visitors to and from his hotel that, in 1811, he resolved to have a steam-vessel built to ply between Glasgow and Greenock.

The forerunner of the mighty steam-ships, which in our day have brought the remotest ends of the earth together, was a modest vessel of only four-horse power, and a speed of five miles an hour. It was named the *Comet*, and began to run in 1812, while James Watt was still living, while Sir Walter Scott was writing his world-famous romances, and the Duke of Wellington was winning glory for Great Britain in the war with France.

Small though the vessel was, the sailing of the *Comet* marks one of the most important epochs in the progress of commerce and civilization, and especially of Scotland. A hundred years before, the enterprise of a few Glasgow merchants had raised their country to an important place among



HENRY BELL

ORIGINATOR OF STEAM NAVIGATION ON THE CLYDE

From an engraving after the painting by J. Tannoch

the commercial nations of the world. Now the foresight and shrewdness of a Glasgow builder made her the birthplace of steam navigation,[1]—at any rate in Europe—and in a few years the centre of a great ship-building industry.

John Rennie and Bridge-building

The steam-engine and the steam-boat have had such important results in the last century that, in turning back to the period when they were invented, we are apt to fix our attention on them, and to overlook other engineering works of the time which well deserve to be remembered. Many of us to whom the name of James Watt is familiar have never heard of John Rennie or Thomas Telford; and yet the work which those two great Scottish engineers achieved was hardly less remarkable than that which Watt accomplished, and required no less ingenuity, toil, and perseverance.

John Rennie, who was born in 1761, was a young man when Watt was middle-aged, and was employed by him as a millwright to set up the machinery in the Albion Mills—the first mills in which Watt's steam-engine was used to drive

[1] The claim of America to be regarded as the birthplace of steam navigation rests on the fact that a steam-vessel was plying on the Hudson in 1807—five years before the *Comet* was plying on the Clyde—but six years after the *Charlotte Dundas* had begun to ply on the Forth and Clyde Canal.

machinery for grinding, fanning, and sifting corn. As a boy he had learned the trade of millwright in a two years' apprenticeship with Andrew Meikle, the inventor of the thrashing-machine, whose little farm formed part of the small estate of Phantassie, which belonged to Rennie's father. Later, however, he almost entirely gave up the work of a millwright, and devoted himself to a branch of engineering which, up to his time, was scarcely practised in Scotland—the building of bridges, the making of docks and harbours, and the draining of swamps and marshes.

Rennie's bridges are his best-known works. In his youth bridge-building was an almost unknown art in the country. Both in England and Scotland, it is true, fine solid bridges of stone had spanned the chief rivers as far back as the thirteenth and fourteenth centuries. These, however, were supposed to be the work of the "Brothers of the Bridge", an old order of monks who had long passed away; and with the passing of the order the art of bridge-building had been forgotten in Great Britain for generations. It was revived about the middle of the eighteenth century by a group of English engineers, the greatest of whom, Smeaton, the inventor of the blowing-engine, built bridges in Scotland at Perth, Banff, and Coldstream.

As a bridge-builder, Rennie far surpassed his

JOHN RENNIE

CIVIL ENGINEER

From an engraving after an original by Behnes

English predecessors. Though he built several in Scotland, his most celebrated bridges are three over the Thames at London—Waterloo Bridge, Southwark Bridge, and New London Bridge. The first of these, which was opened in 1817 on the anniversary of the battle of Waterloo, is still admitted to be one of the most solid and beautiful structures ever built.

Besides the bridges he built there, Rennie carried out many other most important engineering works in England. He drained the fens of Lincoln and Cambridge, thereby bringing miles of waste land under cultivation; and he planned the great London, and East India, Docks, the docks at Hull and Southampton, and the famous breakwater at Plymouth.

In Scotland not the least important of his work was the help he gave in deepening the Clyde, and making the still too shallow river a fit waterway for the mighty vessels which were soon to be built on its banks. He had invented a dredging-machine for raising the mud and gravel from the beds of rivers; and at his suggestion, about 1799, this was used in the Clyde with good results.

While in the west he helped to prepare a waterway for the as yet unbuilt Atlantic liners, in the east he was the means of saving many vessels from destruction by planning the celebrated Bell Rock Lighthouse, which is built on a treacherous

reef of rocks in the German Ocean not far from the entrance to the Tay.

In England, as well as in Scotland, the engineer of so many great public works was regarded as a public benefactor; and when in 1821 he died, he was buried in St. Paul's Cathedral, near Sir Christopher Wren, the architect of that noble building, the dome of which looks down on Waterloo Bridge.

Thomas Telford—Iron Bridges

Rennie's bridges were built of stone; his fellow-countryman and contemporary, Thomas Telford, may be said to be the first engineer who succeeded in constructing iron bridges. Telford was four years older than Rennie, having been born in 1757; but the work by which he is best known —the celebrated iron suspension bridge over the Menai Strait between Carnarvon and Anglesea— was not completed till five years after Rennie's death.

The engineer of this famous bridge began life in a lonely valley in Dumfriesshire. His father, who was a shepherd, died when his son was still an infant, leaving him to be brought up by his widowed mother. As a boy the future engineer was known by his comrades as "Laughing Tam", in consequence of his cheerful disposition and love

of fun. He adopted the trade of a stone-mason; and in 1780 took part in the building of the New Town of Edinburgh, which at that time was rapidly rising. Two years later he went to London, where he continued for some time to work as a mason.

The first important work on which he was engaged as an engineer was the making of the Ellesmere Canal, to connect the rivers Dee, Mersey, and Severn. This work brought Telford in contact with John Wilkinson, one of the greatest ironmasters of his time, who was regarded as "iron-mad", because he believed that iron could be employed for making bridges and ships, and for many other purposes for which it has since been used. It is Wilkinson who deserves the credit of having had the first iron bridge built—one over the Severn at Coalbrookdale. This bridge, though not perfect, served its purpose. By noting its defects, Telford was enabled to avoid them in constructing his first iron bridge, which was built in 1796 over the Severn.

Though Telford is best known as the engineer who perfected the art of iron bridge-building, it must not be supposed that he built only iron bridges. Several fine stone bridges were designed by him, and he planned and carried out as well many other important engineering works. The growing commerce of Scotland was greatly aided

by the harbours which he built for several seaport towns and villages. Wick, which had up to that time been a mere village, became one of the most important fishing-stations in the kingdom when Telford's harbour afforded shelter for fishing-vessels. The harbours which he built at Fraserburgh and Peterhead helped to make these small towns busy little centres of trade; and it is no doubt partly owing to the great docks and harbours which he constructed at Aberdeen and Dundee that these two towns have increased so much in population, in wealth, and in importance.

One very important part of Telford's work —the making of roads—we shall speak of further on. There is hardly any part of his native country in which we cannot find some trace of his work. In Edinburgh, he built the great Dean Bridge over the Water of Leith; in Glasgow, he planned the Broomielaw Bridge across the Clyde, which was opened in 1836—little more than a year after his death, which took place when he was seventy-seven years of age.

One great service he rendered to the people of his native valley of Eskdale was to leave a sum of money to establish two small libraries, where the poorest might borrow books. Thus, we are told, there is hardly a cottage in the valley where there are not to be found some books fur-

nished by the money earned by the son of the poor Eskdale shepherd.

Road-making—Telford and Macadam

Nowadays, the making of a road seems such a simple thing to us that it strikes us with wonder that the spinning-jenny and the steam-engine should have been invented, and canals carried over miles of hill and valley, before firm level highways, such as we see everywhere to-day, were constructed in Great Britain. It is a fact, however, that it was not till the beginning of the nineteenth century that the present system of road-making came into practice.

Long before that time, to be sure, people in England and Scotland had begun to turn their attention to the making of roads. We have seen how, after the rebellions of 1715 and 1745, roads were made by the soldiery through parts of the Highlands; but these were constructed only for military purposes, and did little for the trade of the country through which they passed. In 1750, the first Turnpike Act for Scotland was passed by Parliament, authorizing the making of a road through East Lothian, on which turnpikes, or tolls, were placed at intervals, where travellers in vehicles, or on horseback, were required to pay a small sum towards the making and repair of

the road. Though people at first grumbled at having to pay what they called a tax, they soon saw that the new road saved them more than it cost, and during the next fifty years, many turnpike roads were made throughout the Lowlands.

Those roads, however, had not the firmness and evenness of our modern "macadamized" highways. Their surface was made by tumbling upon them quantities of gravel, the stones of which, being rounded, without points or angles, never fitted in together, but were displaced by every passing vehicle. The modern plan is to have stones broken of about equal size, and with points and angles that fit in together, when they are laid down, and form a compact surface.

This process of road-making is named from a Scotchman called Macadam, who, after making a fortune in America, returned to his own country, where, about 1815, he turned his attention to road-making, and spent a large part of his fortune in carrying out his views on the subject. Later, he had the satisfaction of seeing his plan employed in the making of roads all over England, while Parliament gave him back the money he had spent on public work, along with an additional two thousand pounds.

It is doubtful, however, whether Macadam was the sole inventor of the system of road-making which bears his name, as a similar process seems

to have been adopted, about the same time, by Rennie in making the surface of the Waterloo Bridge, and by Telford in laying the many miles of roads which he was employed by Government to construct.

Perhaps no single man ever did so much as Telford for the advancement of the industry and civilization of the Highlands and north of Scotland. Under his direction, during the first twenty years of the nineteenth century, no less than 920 miles of good roads were made, and no fewer than 1200 bridges built, some of stone, and some of iron, over streams and rivers that crossed the line of the roads.

When he began his work, he found in the remote Highlands a miserably poor, idle, and dirty people, herding in wretched hovels along with their pigs and cattle, and cultivating their patches of ground in methods long disused by the rest of the world. The making of his roads and bridges gave employment to many hundreds of men, who before had never used tools, and did not at first know how to work. Every year hundreds of ignorant, listless idlers were turned into good workmen. Every year, as new roads were made, the inhabitants of wild, remote districts of the north were brought into contact with the more civilized people of the south. Soon stone cottages took the place of mud hovels; pigs

and cattle were removed to sties and cow-houses; modern ploughs and other implements began to be used in the fields; and carts were seen carrying, along the new roads, the manure and other burdens which used to be borne on the backs of women or horses.

CHAPTER XI

DEVELOPMENT OF THE IRON TRADE

David Mushet and the Black-Band Ironstone

In an earlier chapter we have seen how the iron trade of Scotland was founded in 1760 by the setting up of the Carron Works. Yet for nearly half a century longer, there continued to lie in the heart of the country, unknown and unsuspected, large stores of ironstone, which were later to yield work and wages to hundreds, and wealth to a few.

The improvement of the steam-engine, and the invention of various sorts of machinery, about the end of the eighteenth and beginning of the nineteenth century, increased very much the demand for iron. It is an interesting fact that, just when iron was wanted, in Scotland, it was found. In the very year when Symington took out the patent for the "first practical steam-boat", another Scotchman made the discovery of stores of unworked iron hidden in the ground, enough to furnish machinery for the thousands of steam-ships which were to be built in the coming years.

The man who made so important a discovery was David Mushet, who was born at Dalkeith in 1772, and at nineteen years of age was employed as accountant in the Clyde Iron Works. In this position, his work of course was merely to keep the books of the company; but he was deeply interested in the manufacture of iron, and he spent much of his leisure time in *assaying* iron —that is, making experiments in the smelting of iron ore in various ways. In this way he gained an accurate knowledge of the properties of iron, as well as practical skill in extracting it from the ore.

It was through the knowledge and experience which he gained in the course of his experiments, carried on for some years, that Mushet was enabled, in 1801, to make the discovery of what is known as the black-band ironstone. Up to that time, only the kind of ironstone known as the clay-band was dug and smelted in the Scottish iron-foundries; and when Mushet first announced his discovery of the black-band iron, he was jeered at by the iron-masters of the time for classing the "wild coals" of the country with the ironstone fit for smelting.

It was in the bed of the little river Calder, near which he was erecting iron-works, that Mushet picked up his first specimen of black-band ore, which he tested, and found rich in iron. Through

his knowledge of geology, he was able to discover large beds of it in the western counties of Scotland, and it was later found in large quantities scattered throughout the broad strip of country that lies between the Firths of Forth and Clyde. As the train nowadays carries us from the capital of the east, to the capital of the west, of Scotland, we see everywhere the tall chimneys of the iron-works which are engaged in smelting the "wild coals of the country". For it is almost solely the ore that Mushet found which is now smelted in the Scottish furnaces, and which has given to Scotland an important place among the iron-making countries of the world.

Neilson and the Hot-Blast

Mushet's discovery, important though it was, would have been of but little practical value but for the invention of a fellow-countryman, who was born some twenty years after him. This was James Beaumont Neilson, the inventor of the hot-blast.

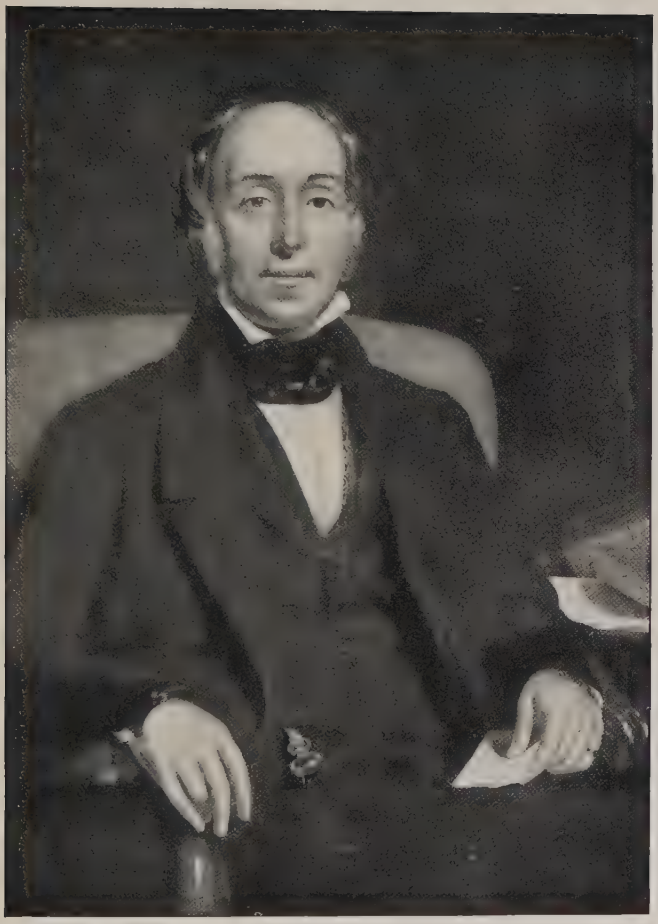
Neilson was born at the village of Shettleston, near Glasgow, in 1792. His father, who was an engine-wright at the Govan Coal Works, and seldom earned more than sixteen shillings a week, managed nevertheless to send his son to the parish school, where he learned reading, writing,

and arithmetic, until he was nearly fourteen years of age. Afterwards he learned the trade of engineman, and was for some time engine-wright in a colliery in Ayrshire.

In 1817, when the *Comet* had been plying on the Clyde for some five years, the first gas-works were started in Glasgow; and Neilson obtained the post of foreman of the works, with a salary of £90 a year. Till 1847, when he retired, he remained in the works, first as foreman, and afterwards as manager.

Like David Mushet, he took a great interest in the smelting of iron, though it did not belong to the work for which he was employed. Being consulted, on one occasion, about a furnace which was acting irregularly, he was led to the idea that, if *hot* air were used in blowing up furnaces, instead of cold, greater heat would be obtained. He at once put his idea to the test of experiment, first by surrounding a gas-burner with a current of warm air, and afterwards by blowing up with heated air an ordinary smith's fire. The results in both cases proved that he had been right in his opinion—the flame of the gas was unusually clear and bright, and the heat of the fire was much greater than when blown up with cold air.

Neilson now endeavoured to persuade the masters of the various iron-works to allow him to try experiments with heated air on their fur-



JAMES B. NEILSON

INTRODUCER OF THE HOT BLAST IN SMELTING IRON

From an engraving after the painting by W. Wallace, W.S.A.

naces; but it was long before he could induce any of them to do so. The opinion which they all held at the time was that the colder the air used in blowing up the furnaces the better was the iron; and all sorts of means were used in the iron-works to cool the blast, the air being sometimes passed over cold water, or the air-pipes surrounded with ice. When Neilson, who was known to be only a gas-maker, and not an iron-founder, proposed to do exactly the opposite of the usual practice, he was looked on as merely ignorant and presumptuous, just as Mushet had been considered ignorant and foolish for thinking that the black-band ironstone could be used for smelting.

At length, after some years of disappointment and waiting, Neilson was allowed to try his plan in the Clyde Iron-works; and it was at once successful. By the use of the hot-blast, the heat of the furnaces was increased so much that almost a half more iron was extracted from the ore than used to be with the cold blast. There was another important advantage connected with the hot-blast. We have seen in an earlier chapter that, before Smeaton invented the blowing-engine, only charcoal could be used in smelting iron. Smeaton's invention made it possible to use *coke* for the purpose; with the hot-blast it was found that coal could be used

in its raw state. In Scotland in particular this was of the greatest advantage, as Scotch coals are not suitable for making coke, and more than half of the coals used for the purpose were wasted in the process of being converted into coke.

Neilson's invention has thus been the means of saving millions of tons of coals in Scotland every year. It has also brought into use the great stores of ironstone — especially the black-band—laid up in the heart of the country, which were not suitable for smelting in the old way.

A few years after the invention was patented (in 1828) nearly every furnace in Scotland had adopted the hot-blast, while new iron-foundries were springing up wherever the black-band ironstone was found, creating work and wages for hundreds of new workers every year. In fact, it has been said that Neilson's hot-blast did as much for the iron trade of Britain as Arkwright's machinery for the cotton trade.

James Nasmyth and the Steam-Hammer

We have seen that one result of the invention of the steam-engine was an increased demand for iron. Another was the need, which was soon felt, for improved tools for making the new machinery of all sorts which grew out of

the invention. In particular, when steam-ships began to be made on a large scale, it was found that no hammer then known was powerful enough for forging the enormous masses of iron which were used in parts of the machinery.

As the study of history shows us, however, whenever a want is widely felt, the man arises who can supply it. When iron was wanted in Scotland, Mushet discovered it. Now, the thing wanted was a hammer of enormous power; and almost as soon as the want was felt, James Nasmyth had invented the steam-hammer.

James Nasmyth, who was born in Edinburgh in 1808, was the son of the well-known landscape-painter, Alexander Nasmyth, and the brother of Patrick Nasmyth, who was no less famous as an artist than his father. The father seems to have had a talent for mechanics as well as for art; for we are told he spent most of his leisure time in a little workshop of his own, where, as a boy, James was allowed to help him in making all sorts of ingenious articles.

The knowledge and skill which the boy gained in his father's little workshop were increased by his being permitted to spend his Saturday afternoons in an iron-foundry belonging to the father of a school friend. There he delighted to watch the various processes through which the iron passed, and especially to lend a hand when it

was wanted. By the time he was fifteen he could do quite creditable work in wood, brass, iron, and steel; and he succeeded in making a small steam-engine, which his father employed to grind his colours.

At the age of twenty he went to London to seek for employment in a great engineering house, taking with him, by way of introduction, a small model engine which he had made entirely with his own hands, and some of his drawings. On reaching the metropolis, after a voyage of eight days in a Leith smack, he was at once successful in securing the employment he desired. During the next four or five years he advanced step by step till, in 1834, he was able to start a business of his own in Manchester.

About four years later (in 1838) the engineer who was engaged in constructing a large steamship, known as the *Great Britain*, wrote to Nasmyth that there was not a hammer in England or Scotland powerful enough to forge the paddle-shaft of the steamer, adding, "What am I to do?" Nasmyth replied almost at once, enclosing a sketch of his steam-hammer, which he had invented to meet the difficulty, after pondering over it for an hour or two.

Up to that time the most powerful hammer known was the *tilt*-hammer, which had been invented by James Watt. It resembled an

JAMES NASMYTH

INVENTOR OF THE STEAM-HAMMER

From a photograph by Elliott & Fry

enormous hand-hammer, consisting of a shaft and a heavy head, and was worked by steam. Of course such a hammer could be raised no higher than its own length, and its fall on the anvil was too short for forging thick masses of iron. The thicker the piece of iron on the anvil the weaker was the blow which it received from the tilt-hammer, though it was, of course, the thickest masses of iron that required the most powerful blow.

Nasmyth saw that what was required was some means of raising a heavy block of iron high enough for it to fall with great force on the anvil. He therefore gave up the old form of hammer with head and shaft, and adopted instead a heavy iron block attached to a piston in a cylinder, which was pushed up by steam, and then allowed to fall with all its weight on the anvil.

Like all great inventions Nasmyth's steam-hammer seems so simple that we wonder it had not been invented long before. Yet it was some years before engineers could be induced to see its importance, and to adopt it. Now it is admitted to be "one of the most perfect of artificial machines", without which the gigantic engineering works of recent years could not have been accomplished.

CHAPTER XII

SOME RESULTS OF THE INDUSTRIAL REVOLUTION

Parliamentary Reform

We have seen that the immediate result of the invention of machinery, and its employment in the various manufactures, was to bring large numbers of people from the country districts into the towns, which rapidly increased in size. Many of those who were drawn to the towns by the hope of large wages had, up to that time, thought of little beyond their daily work and the gossip of their native village; but in the towns they were thrown into contact with hundreds of their fellow-countrymen from different districts, and they heard talk which opened their minds to new interests. It was towards the end of the eighteenth century, when manufactories were springing up everywhere, that, both in England and in Scotland, the cry for parliamentary reform began to be raised.

In our days each member of the House of Commons is chosen by the people of a particular town or district to speak for them, or *represent* them in Parliament. He is the spokesman, or

representative, of a large number of people, whose wishes he is sent to Parliament to express. Before 1832 this was not so. In England many members of Parliament were elected, each by a single land-owner, whose vote, in several cases, was actually known to be *bought*, while, on the other hand, many large towns, such as Manchester, Leeds, and Birmingham, had no representative at all.

If the people of England were badly represented, those of Scotland can hardly be said to have been represented at all. Since the Union, forty-five Scotch members had sat in the British House of Commons — thirty representing the Scottish counties, and only fifteen the towns. Of the towns, Edinburgh alone had a member of its own; the other Scotch towns shared the remaining fourteen town members between them. The franchise, or right of voting, was possessed by only about two thousand people over the whole of Scotland, and only for the county members. The town members were simply chosen by the various town-councils, which were self-elected, and thus the people had no voice in their election at all.

Now, it is a principle of the British constitution, as old as *Magna Carta*, that all who pay taxes to the Government have a *right* to be represented in the Government. The

growth of manufactures, by bringing the poorer classes together from every part of the country, and widening their interests, awakened them to a sense of their right and of its importance. In Scotland, the desire to have a voice in the Government which she helped to support, grew and strengthened for many years; societies of men in favour of reform began to be formed and meetings to be held.

At first those reform societies and meetings were looked on with distrust, and even alarm, by those in power, who attempted to put them down by severity. It was in the days when the French Revolution had taken place; and many people in Britain were afraid that the reform party at home might imitate the French republicans, and pass from talk to violence and bloodshed. In 1793, an advocate named Thomas Muir, and several other young men, who had been active both in speaking and writing in favour of reform, were tried at Edinburgh for "sedition", and most unjustly sentenced to transportation for many years. So rapid was the change of public opinion that, fifty years later, a monument was erected to the memory of these "political martyrs", as they were called, in the town where they had been tried.

The Reform Bill of 1832

The outbreak of the war with France put off for twenty years all possibility of carrying out political reform. During those years all the thought and energy of Great Britain were taken up with the struggle with the greatest general of his time. No sooner was the war over, however, and the minds of the people of Great Britain relieved from the terror of invasion, than the cry for reform once more began to be heard.

Throughout the reign of George the Fourth (from 1820 to 1830) reformers had little hope of success, as the king was known to be unfavourable to the movement. Early in the reign of his brother, William the Fourth, however, the famous Reform Bill was brought before Parliament by Lord John Russell. The Scotch Reform Bill was drawn up by Francis Jeffrey, one of the founders of the *Edinburgh Review*, who had become Lord Advocate for Scotland, and Lord Cockburn, whose *Memorials* give us a lively impression of the state of feeling in Scotland at the time of the passing of the bill.

The main objects of both the English and Scotch bills were to prevent any member of Parliament being the nominee of a single man, and to give the franchise, or right of voting, to a larger number of people. Each member of the

House of Commons was to be the representative of *at least two thousand people*; all towns or districts containing less than that number of inhabitants were to be deprived of the right of sending a member to Parliament, while the right of electing one, or even two members, was to be given to several large towns, which did not as yet possess it. In Scotland, towns such as Aberdeen, Dundee, Glasgow, Paisley, Greenock, and Leith, were each to have a member for the first time.

Reasonable though these proposals seem to us now, the Reform Bill was rejected by a majority of the House of Commons when it was first brought forward in 1831, and many people looked upon it as a dangerous measure. One Scotch member of Parliament remarked that the people of Scotland were too ignorant and too violent to be trusted with the franchise; and that no general election could take place in the country without bloodshed! The reply of the working people of Scotland to such an acccusation was to hold large meetings of those in favour of reform—meetings which were distinguished by good order, and by the reasonableness of the speakers.

These large political meetings, so common in our own day, were something entirely new in Scotland in 1831, and were considered by some people as alarming, and by others as a hopeful sign of the life of the people. They helped to increase the

intense excitement which prevailed all over the country when a new Parliament was elected, and the Reform Bill was brought forward a second time. Not for generations had there been such eager general excitement throughout the country.

On the second occasion the bill passed the House of Commons; but was rejected by the House of Lords. When it was known that it had been rejected by the Lords, the indignation throughout both England and Scotland was so great as to arouse fears of revolution and even civil war. At length, in June, 1832, the Reform Bill passed both Houses, and became the law of the land.

In Scotland, where crowds of people eager for news had waited for days before the various post-offices, the tidings of the passing of the bill was received with the wildest joy, and celebrated by large open-air meetings, and processions with banners and music.

The Rise of Trade-Unions

The employment of machinery in manufactures not only brought crowds of people from the country to the towns, but it was also the cause of great changes in the position of workmen and their relations with their employers. It was those changes, as we shall see, which gave rise to the

modern societies of workmen, known as Trade-Unions.

In the old days, every master who employed workmen had himself served an apprenticeship to his trade; and he worked in his own house along with his journeymen and apprentices, of whom he had at most ten. With the invention of machinery, the factory system came into use, by which hundreds of "hands" were employed by a single mill-owner. In the old days, when trade was dull, the masters, who had only three or four workmen to pay, could afford to keep them on, working "on stock", as it is called—that is, making goods to be stored up till trade improved. The modern manufacturer, with his hundreds of workpeople to pay, could not afford to work "on stock", but only "on order". When trade became dull, and orders ceased to come in, factories were closed, and hundreds of people were thrown out of work.

In the first rush of trade, which followed the invention of machinery, there was work for all in the factories; and manufacturers found it profitable to employ even women and children at low wages. As long as there was plenty of work, the men made no objection to this; but when trade became slack, they complained that the employment of women and children in the factories took the bread out of their mouths.

In 1796 the first modern trade society, known

as the "Institution", was formed by the cloth-workers in Halifax, in Yorkshire, to prevent the employment in factories of people who had not served a regular apprenticeship. Three years later, a union of shoemakers in Scotland, for the purpose of raising their wages, was regarded as illegal, and the leaders were tried; and in 1800 Parliament passed a law forbidding all "combinations" of workmen for the purpose of increasing wages, or decreasing hours of work.

The passing of this law led to the formation of secret societies of workmen. The cotton-spinners of Scotland formed a large society, with a secret committee of three men, who issued their orders like kings. When they were not pleased with the rate of wages, they ordered a strike of all workmen in the trade; and any men who continued to work afterwards were bribed to stop, then threatened, and if they still continued, were attacked with stones, or vitriol, and sometimes even shot. Not only did those strikes cause great loss of trade, but great suffering to the working people, as men sometimes remained on strike even when they themselves and their families were almost starving.

In 1824, the law of 1800 and other "combination" laws were repealed by Parliament; and since that time there have been several enquiries by parliamentary commissions into the question of

trade-unions, and the relations of employers and employed. It is now permitted by law for workmen to combine to fix the rate of wages at which they will work, so long as they do not use force or threats to prevent other workers from working at a lower wage, or masters from employing cheaper labour.

During the last fifty or sixty years trade-unions have increased greatly in strength and numbers, and the result has been in general an increase in the rate of wages and a decrease in the hours of work. The rise of wages, however, has of course increased the cost of goods manufactured in this country, and led to the import of large quantities of cheap goods from countries where wages are lower.

Trade-unions, however, exist not only for the purpose of raising wages, but also as friendly societies, and as such they are a great blessing. To all workmen who pay a small weekly sum while in health and in work, they afford help in sickness, or old age, or when out of employment.

CHAPTER XIII

THE VICTORIAN ERA

The accession of Queen Victoria to the throne of Great Britain in 1837 seems to mark the beginning of modern times. By far the greater number of those now living were born during her long reign, and most of us can remember the mourning of the nation when that reign ended, in 1901.

When we glance back over the sixty-three years which the reign covers, three things in particular strike us as worthy of our attention. The first of these is the great increase of means of communication—such as the electric telegraph, the penny post, the ocean liners, and the railway-train—which has taken place during the period. The second is the division in the Church of Scotland, which is known as the Disruption. The third is the steady growth of a spirit of philanthropy, as shown in various Acts of Parliament, in the foundation of charitable institutions of all sorts, and in the progress of missionary enterprise.

The Electric Telegraph

The telegraph is just as old as the reign of Victoria. It was in the first year of the reign

that two Englishmen, Wheatstone and Cooke, took out a patent for what is now called the *electric telegraph.* It is an invention for sending messages to a distance by means of *electricity.* Electricity is the force which causes thunder and lightning. It is named from *electron,* the Greek word for amber; because the ancient Greeks first discovered the existence of the force by finding that a piece of amber, when rubbed, could be made to lift up very light objects.

What enabled the inventors of the telegraph to put electricity to practical use was the discovery that it could be made to pass along wires stretched across the country for even hundreds of miles. The telegraph clerk at one end of the wires sends along them a series of electric shocks, each of which is a *sign* of a word or a letter; the clerk at the other end knows how to read these signs, and put them into words; and so friends separated by thousands of miles can speak to each other.

About thirty years after Wheatstone and Cooke took out their patent, the first electric *cable,* as it is called, was laid on the bed of the Atlantic Ocean, connecting England with America. Nowadays cable lines run not only under the Atlantic, but under the wider Pacific, so that events taking place on the other side of the world can be known in this country an hour or two later. What a change from the days, not two hundred years

before, when ministers prayed for the king of their own country weeks after he was dead!

The Penny Post

The introduction of the penny post, like the invention of the electric telegraph, dates from the beginning of Victoria's reign, and has made a marked difference in the habits and lives of the people of the country. Before 1840, when the penny postage system was adopted, the cost of sending a letter by post, even to the different parts of this country, was so high that very few people wrote letters. Thus, when a young man left his home in a remote district of Scotland to go to London, or even Glasgow, his family were apt to lose all sight of him, as neither he nor they could afford to send letters by post. Sometimes people at a distance from each other agreed to send each other a blank sheet of paper as a sign that all was well. When this blank letter arrived, the person to whom it was addressed would refuse to take it from the postman, and so receive all the information it contained without paying for it.

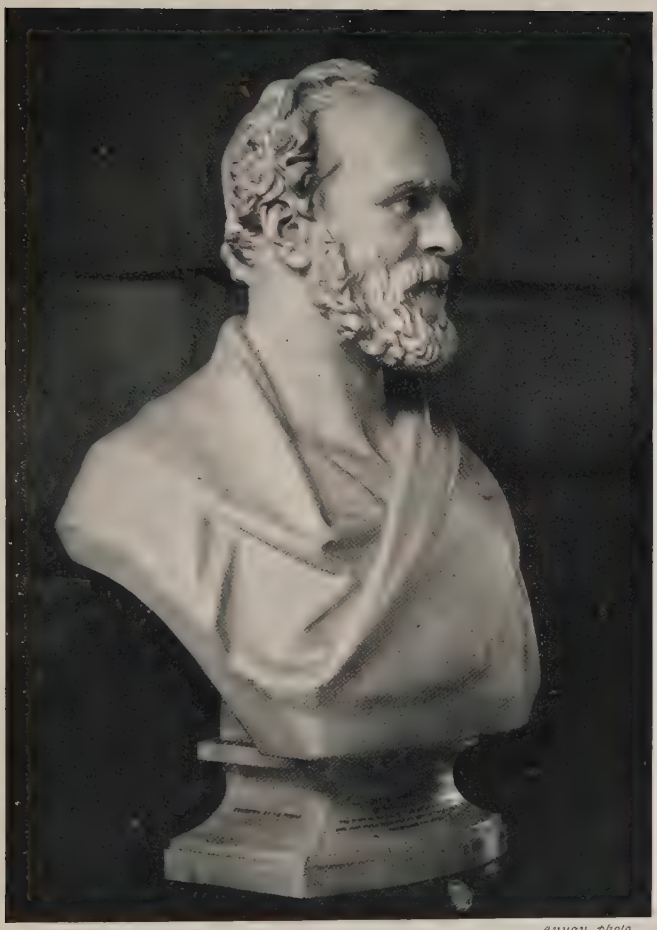
The reduction in the rate of postage led to such an increase in the number of letters written and posted that the revenue of the Post Office rose greatly, instead of falling. Thus the penny post proved a great blessing to the country in many

ways. It was a great advantage to trade, as well as to friends, or members of a family separated from each other, and it helped to increase the revenue of the Government.

Progress of Ship-building

From the year 1812, when the *Comet* began plying on the Clyde, the number of steam-boats built on that river increased yearly so rapidly that, in the year when Victoria ascended the throne, no fewer than seventy-eight steamers were calling at Greenock. During the eighteenth century Leith had been the chief centre of the ship-building trade of Scotland; but the ship-building yards of the Clyde, the birthplace—in Europe, if not in the world—of the steam-ship, had now become the most important in Scotland, if not in the world.

For the first five or six years after the launching of the *Comet*, steam-boats were employed only on rivers. It was thought at that time impossible to construct a steamer fit to encounter a heavy sea. Of the steam-boats built on the Clyde during those early years, the greater number plied on that river; but, later, Clyde-built steamers were plying on the rivers of England, France, Germany, Canada, and Australia. On the Clyde the steamers, though not at all rapid, were a great improvement on the "fly-boats", by which the



Annan, photo.

DAVID NAPIER

MARINE ENGINEER

From the bust, by Matthew Noble, in the Scottish National Portrait Gallery

traffic between Glasgow and Greenock was carried on before the appearance of steamers. The fly-boats, which were moved by wind, and oars, and sometimes even by horses, could, it is said, "in favourable circumstances", accomplish the passage between Glasgow and Greenock—some twenty-seven miles—in ten or twelve hours. It frequently happened, however, that they stuck in a shoal, and the passengers were forced to spend the night on the river.

The First Sea-going Steamers

The next important date in the history of steam-ships is the year 1818. It was in that year that David Napier of Glasgow, the engineer who had made the boiler of the *Comet*, succeeded, after much thought and many experiments, in the construction of a steam-ship capable of venturing out on the open sea—a thing which had before been thought impossible. This steamer, which was named the *Rob Roy*, plied for some time between Greenock and Belfast, and was afterwards bought by the French Government, and employed in the Channel trade. The *Rob Roy* was soon followed by other sea-going steamers; and in a few years there were steam-ships regularly making the passage between Glasgow and Liverpool, and between Britain and Ireland.

The First Ocean Liners

It was not till twenty years after a steamer had ventured for the first time on the open sea, that a British steamer attempted to cross the Atlantic to America. During those twenty years, it is true, two American ships had made the passage of the Atlantic, the first partly, the second wholly by means of steam; but it was not till 1838 that a British steamer ventured to cross that ocean. Two years later the first regular line of ocean-going steamers was started. It was named the *Cunard* line, from Samuel Cunard of Halifax, Nova Scotia, who was the first to propose the building of the steamers of which it consisted, in order to carry the mails between Britain and America. With him were associated George Burns of Glasgow, and David MacIver of Liverpool.

The four steamers, which at first composed the *Cunard* line, were built by Robert Napier, the cousin of David Napier, the builder of the first sea-going steamer. The first of the four to sail (the *Britannia*) made the passage from Liverpool to Boston in a fortnight; and on its arrival at Boston was received with cheers by the people.

The success of those first ocean liners led to the adoption of steamers on all the great routes of the world. Every year, for a while, more

steamers were wanted; every year orders came to the Scotch ship-building centres, Leith, Dundee, Aberdeen, and especially to Glasgow, which increased rapidly in size and importance.

The Beginning of Iron Ship-building

The hulls of the first four ocean liners were built of wood; but some years before they were built, iron had begun to be used in ship-building in place of wood. It may be remembered that Wilkinson, the English ironmaster who was mentioned in a former chapter, was thought "iron-mad" because he believed in the possibility of making bridges and ships of iron. It was Wilkinson who built the first iron boat about 1750; but it was not till about eighty years later that iron began to be regularly used in ship-building.

The first iron steamer built in Scotland was one built on the Clyde in 1827. It was followed by one or two others; but it was not till after 1843, when the *Vanguard* was built by Robert Napier for the passage between Glasgow and Dublin, that iron was generally used in the construction of steamers. It was fortunate for the ship-building trade of Scotland that before that time David Mushet had made the discovery of the black-band ironstone, and Neilson had invented the hot-blast. In recent times steel has largely super-

seded ordinary iron in ship-building. Among modern improvements in the art, the compound marine engine, which has the advantage of saving fuel, was introduced by a Scotch engineer—the famous John Elder of Glasgow.

The Railway and the Locomotive

No less important than the telegraph, or the steam-ship, as a means of bringing the remotest ends of the earth together, are the railway and the locomotive; and though both had been invented before Victoria ascended the throne, it was during her reign that they became what we know them to-day.

Long before the time of Victoria, rails had been used between coal-pits and the nearest port, to enable heavy wagons to be drawn more easily by horses. These early rails were made of wood; but in 1812 a railway composed of cast-iron rails was opened between the towns of Kilmarnock and Troon in Ayrshire—a distance of nine and a half miles. This may be said to have been the first public railway in Scotland; but it was a very different thing from what we mean by a railway nowadays. No great iron engine swept along it with shrill whistle, and column of smoke, and long tail of carriages. Only at long intervals a clumsy vehicle, like an omnibus, was dragged slowly by

panting horses. Up till as late as 1845, horses were used to drag carriages along a line of rail between Edinburgh and Dalkeith.

Twenty years before that time, however, the first railway on which a locomotive engine was employed to draw carriages had been opened between the towns of Stockton and Darlington, in the north of England. Five years later a more important line was opened between Liverpool and Manchester. The engineer who constructed both those lines was George Stephenson, who is regarded as the inventor of the locomotive, since he was the first to make it of practical use, though from the time of James Watt onwards there had been several more or less successful attempts to construct what was called a "travelling engine".

After the opening of the Liverpool and Manchester Railway, a perfect craze for the making of railways spread over England, and into Scotland. Every year dozens of schemes for new lines of railway were started, companies were formed, and people eagerly gave their money, hoping to make their fortunes. Sometimes they were fortunate; but more often they lost all they had. The railway mania reached its height in 1845, when a writer living in Scotland at the time describes Britain as "an island of lunatics, all railway mad".

It was not till after the railway mania had

passed, that people began to see that the real use of railways was not to enable them to make fortunes, but to facilitate trade and commerce, give employment to thousands of workmen, and to bring the people of distant countries together, and enable them to learn from each other.

One important result of the railway was that it helped to unite more closely together what once had been the two hostile countries of England and Scotland, and to make them more truly one. In the year 1850, Queen Victoria opened the bridge over the Tweed at Berwick, which completed a line of railway between the capitals of England and Scotland. As the train containing the queen glided into the station of the border town, which had been the scene of so many fierce struggles between Scotch and English, it passed under an arch on which were inscribed in golden letters these words, "THE LAST ACT OF THE UNION".

Children and the Factory Acts

There is nothing more remarkable in the long reign of Victoria than the number of measures which have been passed by the Government for the protection of children.

The invention of machinery had led to the employment of children in the factories. There

were many small tasks connected with the machines which even quite young children could easily be taught to do; and as they could be got to work for very low wages, manufacturers found it profitable to employ them. When the cotton manufacture was introduced into Scotland, and several factories were built in the west of the country, there was at first work for every pair of hands that could be got, even the smallest, and large numbers of children were employed. It is sad to think that, up to 1819, numbers of young children under nine years of age spent long hours at work in the factories, deafened with the constant whirring of the machinery, and stifled with the close air.

If the fate of the children in the factories was hard, however, that of those in the coal-pits was ten times harder. It seems almost impossible to believe that, little more than sixty years ago, children of eight years old were allowed to toil underground in the coal-pits in the west of Scotland, while in those in the east of Scotland little things of five and six were employed! Their work was to carry coal on their backs along the pit-bottom, and up the long, damp wooden stair, which led to the mouth of the pit in the days before a lift was used for raising the coal to the surface. Later, rails were laid in the pits, and instead of carrying the coals on their backs, the

children drew it along the rails in "hurleys", to which they were harnessed like little horses.

It was some time before people in general knew of the way in which the poor children in the factories and coal-pits lived and worked. When it became known, there was a feeling of horror all through the country, which was expressed in Mrs. Browning's poem, "The Cry of the Children", which tells of the sufferings of the poor little workers:

> "For all day we drag our burden tiring
> Through the coal-dark underground;
> Or all day we drive the wheels of iron
> In the factories, round and round".

In 1819 an Act of Parliament was passed, which forbade the employment of children under nine years of age in the cotton-factories, or of those between nine and sixteen years for longer than *twelve* hours a day! Some years later, another Act prohibited the employment of young people under eighteen in night-work.

It was not till 1842, however, that the attention of Parliament was called to the condition of the women and children in the coal-pits by Lord Ashley, afterwards the Earl of Shaftesbury—a nobleman who deserves to be remembered for the many reforms he carried out for the welfare of his poorer fellow-creatures.

Through Lord Ashley's action, a Commission was appointed by Parliament to enquire into the way in which women and children were employed in public works and coal-mines. The Commissioners visited the coal-pits all over the country, and saw for themselves the terrible lives of the women and children who worked in them. The result of the enquiry was the Mining Act passed by Parliament in 1843, which forbids the employment underground of women, or of children under ten years of age.

Three or four years later, the Ten Hours Act was passed, in accordance with which no woman or young person under eighteen may be employed in any public work for longer than ten hours a day. Since that time, Parliament has passed Acts for the protection of children too numerous to mention.

The Church of Scotland and the Patronage Act

We have now reached the year (1843) which is marked by what is perhaps the most important event in the history of Scotland during the nineteenth century—the Disruption of the Church.

To understand the causes which led to this event, however, we must glance back more than a century earlier, to the year 1711. It was in

that year that a law was passed by Parliament, known as the Patronage Act, which gave to one man in every parish (generally the largest land-owner, who was called the *patron*) the right of appointing the minister of the parish church. This right, until the passing of the Act, had belonged to the congregations of the various churches, or to their representatives; and many people in Scotland were indignant at being deprived of it. For many years, the General Assembly of the Church sent up petitions to Parliament to abolish Patronage; and when these were not granted, several bodies, who disapproved of the interference of the State in church matters, left the Church at different times during the following century.

Those who remained in the Church gradually accepted Patronage as the law of the land, and made no opposition to it, until about 1832 a struggle began in connection with it, which lasted for ten or eleven years, and ended with the division in the Church known as the Disruption.

It will be remembered that it was in the year 1832 that the Reform Bill had passed, one result of which was to take the right of electing a member of Parliament from a single land-owner, and to give it to a large number of voters. It was only natural that the passing of that bill

should reawaken the desire among the members of the Church of Scotland to take the right of appointing the minister from the patron, and give it to the congregations. At any rate, the passing of the Reform Bill was followed by the beginning of a strong and steady opposition to Patronage by the leaders of the Church of Scotland. In 1834, the General Assembly of the Church took a most important step in opposition to Patronage by passing what is known as the *Veto Act*. This Act gave to the majority of the male heads of families belonging to any church the right of *veto*, or of refusing to accept any minister chosen by the patron, if they did not like him. It was directly opposed to the Patronage Act, according to which the congregation were bound to accept the minister appointed by the patron, unless there were solid objections to him, such as could be stated in a court of law.

Two or three years after the passing of the Veto Act, a minister was chosen by the patron for the parish of Auchterarder; and the congregation refused to accept him. The minister appealed to the presbytery against the decision of the congregation; and the presbytery declared that the congregation had only acted as they had a right to do in accordance with the Veto Act. The minister then took his case to the

law courts, where a majority of judges decided that the congregation and presbytery had acted illegally in rejecting him without stating any sufficient reason.

The Auchterarder case was followed, during the next few years, by other cases of the same sort, which led to an open struggle between the law courts on the one hand and the leaders of the Church on the other. Congregations and presbyteries which acted in accordance with the Veto Act were "interdicted" by the law courts, while ministers who obeyed the orders of the law courts, rather than those of the General Assembly, were "suspended" by the Church—that is, deprived for a while of their office.

The Disruption—Foundation of the Free Church

We have seen that the opposition of the leaders of the Church of Scotland to Patronage had led to a struggle with the courts of law. While the Church asserted its "spiritual independence"—that is, its right to decide on all spiritual matters without the interference of the Law—the Law maintained its right to decide all questions of justice even with regard to church affairs.

The leader of the Church of Scotland at the time we have reached was Thomas Chalmers,

a man possessed of great earnestness and energy, and of most remarkable powers as a speaker. He was born in 1780 at Anstruther, in Fife; and after studying for the ministry, was for some years minister of a parish in Glasgow, where he introduced a system of poor relief which was remarkably successful. Later, he became Professor of Moral Philosophy in the University of St. Andrews; and at the time of the Disruption had been for several years Professor of Divinity in Edinburgh University.

From the beginning of the struggle against Patronage, he had thrown himself into it with all his warmth and eloquence; and if not first, he was at any rate loudest and most determined in asserting the "spiritual independence" of the Church. This claim to spiritual independence he, and other ministers of the Church of Scotland, hoped to induce Parliament to recognize by passing a Bill which would settle the limits of the power of the Law within the Church. In this, however, he was disappointed. The Government refused to pass any measure which would set the Church of Scotland, in any sense, above the Law.

Dr. Chalmers, and the other ministers with whom the right of the Church to spiritual independence was a principle of the greatest importance, felt that they could not in conscience

remain in a Church to which this right was denied. They therefore resolved to leave it. At the meeting of the General Assembly of the Church in May, 1843, the "Disruption" took place—the party who held the doctrine of spiritual independence took the final step of separating themselves from the Church to which they had hitherto belonged.

For months beforehand it had been known that this last step would be taken at the next meeting of Assembly; and the feeling throughout the country was one of the most intense excitement. All the people were divided in two parties—those who sympathized with Dr. Chalmers and his followers, and those who belonged to the Moderate party. On the morning of the day when the meeting was to take place, the Assembly Hall was crowded hours before the meeting, and the streets were lined with eager spectators. When the long line of ministers stepped solemnly and silently out of the hall which they were never to enter again, they were received with shouts of fervent applause by the crowd in the streets. Even those among the crowd who did not sympathize with the principles of the ministers, could not but admire the courage they showed in giving up all—the manses which had in some cases been their homes for years, and even their very livelihood—for the sake of conscience.

So the long black line passed through the cheering crowds to a hall in another part of the town, which had been engaged for the occasion. There nearly four hundred and fifty ministers signed a deed resigning their livings, and formed themselves into the first Assembly of the Free Church of Scotland.

It was not only the ministers who gave up material comfort for principle. All over the country whole congregations followed their minister, and hundreds denied themselves luxuries, and even necessaries, to raise a large sum for the support of those who had given up their homes and stipends. Thus the Free Church was founded, if, as many think, on a mistaken principle, at least on heroic self-denial.

The Poor-Law

Up to 1845 it was the boast of people in Scotland that there was no Government tax all over the country for the support of the poor, as there had long been in England. The old system of relieving the helpless and aged poor in Scotland may not have been so regular as it is now, but it was perhaps more kindly, and it had the advantage of being associated with religion. It was through the Church that the poor received almost all the help they got. The chief source of poor

relief were the collections taken at the doors of the parish churches. These were distributed in every parish by the elders of the church, to whom the character and needs of the people who received relief were more or less known.

In 1672 the Scottish Parliament had passed an Act which *permitted*, but did not *order*, a tax to be raised for the relief of the poor in any particular parish where the church collections were not found sufficient for the purpose. This plan of assessment or taxation, however, was not adopted in all, or nearly all, the parishes in Scotland; and even where it was adopted, it was still through the Church that the poor obtained relief, as the money raised by assessment was distributed by the kirk-session or elders and other office-bearers of the Church.

Except for what they obtained through the Church, the helpless poor were dependent on private charity, and begging was quite a regular calling with those unfit, or unwilling, to work. There were certain people who were even *licensed* to beg, and had their own particular round, or district, in which they went from house to house, receiving a plate of broth here, a handful of meal there, and perhaps a bed in the loft in a third place. The inhabitants of country districts almost welcomed the visits of the regular beggar as a means of hearing the news of the country, and

received him in a kindly, and almost friendly, way.

The parish system of poor relief, though it had its defects like every other system, did well enough until towards the middle of the nineteenth century, when two causes combined to make it insufficient. The first of these was the invention of machinery, which had brought crowds of people to the manufacturing towns. Of these people, even those who were diligent and thrifty were liable to be thrown out of work, every now and then, during one of those terrible periods of dull trade with which we are all so familiar nowadays, and so to become a burden on public charity. But besides the diligent and hard-working, the factories brought to the towns large numbers of idle and thriftless men and women, who could not or would not work, and gradually drifted together into the poorer parts of the cities, forming what are known as "slums".

It was impossible for church-door collections to meet the terribly increased amount of poverty in the city parishes, even if the Church had been as strong as she had always been; and for more than a hundred years, since the passing of the Patronage Act, she had been gradually losing strength by the secession of various dissenting bodies. The Disruption, by taking away from the Church of Scotland so many of her ablest ministers and her

most zealous members, rendered her quite unfit any longer to deal with the problem of the poor.

It became evident that a system of Government poor-rates must be adopted in Scotland as in England. Many people in Scotland were strongly opposed to Government poor relief. Dr. Chalmers in particular, whose management of the problem of the poor had been so wonderfully successful in his parish in Glasgow, exerted himself to the utmost to prevent the passing of the Scotch Poor-law Bill when it came before Parliament. It must be admitted, however, that he had helped in some degree to make the bill necessary by the part which he took in the struggle which led to the division in the Church. At any rate, it was only two years after the Disruption (in 1845) that the Scotch Poor-law Bill was passed.

Repeal of the Corn-Laws

In the year when the Scotch Poor-law Bill was passed (1845) there was an unusually bad summer all over the country. In Scotland, from April to November, there was constant rain and mist, and hardly any sunshine to ripen the crops, which were, of course, as bad as possible.

In Ireland the crop of potatoes, which formed at that time the chief food of the poor people, was ruined, and hundreds of people were starving.

Large sums of money were raised to buy food for the starving people; but many perished before help could reach them.

Both in England and Scotland there were many who believed that the cause of the famine was not only the failure of the potato crop, but the existence of the Corn-laws, which had been passed at the close of the war with France, more than twenty-five years before, to prevent loss to British farmers.

As we have seen in a previous chapter, as long as the war lasted, little corn from other countries could come into Great Britain, so British farmers had a large sale and a high price for their produce. When the war was over, however, there were ship-loads ready to be landed in our ports; and it was plain that, if such large quantities of foreign corn were allowed to sell freely in our markets, there would be a smaller sale and a lower price for home-grown corn. To prevent the home farmers from suffering, therefore, Parliament passed a law forbidding the landing of foreign corn in this country as long as home-grown corn was selling at less than eighty shillings a quarter.

It is sometimes difficult, however, for even the wisest Government to make a law to benefit one class of people without injuring another. If the Corn-law benefited the farmers, it at the same time raised the price of bread; and poor people

all over the kingdom were loudly indignant against it. Some years later Parliament made some changes in the Corn-law to prevent the price of corn ever rising too high; but these changes did not satisfy the mass of the people, who had begun to clamour for the repeal of the Corn-laws, and "Free Trade".

The leaders of the Free-trade party at that time were two English manufacturers, Richard Cobden and John Bright—the latter a very eloquent speaker. They believed that corn and other goods from foreign countries should be allowed to enter our ports, and sell freely in the country, *without any tax or import duty being put upon them by the Government.* In 1838, Cobden founded the "Anti-Corn-law League", a society which did everything in its power to bring about the repeal of the Corn-laws.

But the Irish famine of 1845 did more for Free Trade than all the meetings and speeches and petitions of the Anti-Corn-law League. The Government felt that it was a duty to prevent such a thing from happening in the future, by throwing open our ports to corn from other lands. In 1846, when Sir Robert Peel was Prime Minister, the Corn-laws were repealed by Parliament.

Since that time, almost all goods from foreign countries have been free to enter our ports, and to sell in our markets in the same way as the

goods grown or manufactured here. Free Trade, however, has not been generally adopted in other countries, by which British goods are still heavily taxed on entering their ports.

Scottish Missionary Enterprise—Livingstone

While at home the great struggle was going on which was to end in the division of the Church of Scotland, far away in the Dark Continent of Africa one of the greatest of Scotsmen was spreading the Gospel of Peace.

David Livingstone was born in 1813 at Blantyre, in Lanarkshire, where, at the age of ten, he was employed in a cotton-mill, working from six in the morning till eight in the evening. In spite of his long hours of work, by making use of his leisure time he managed, with the help of the schoolmaster, to learn Latin, and botany, and many other things, and could read easily some of the great Latin authors before he was sixteen. At the same time he had as much love of fun as other boys, and enjoyed a good romp now and then as much as any of them. He was always ready, too, when not at work, to help his mother in any way he could, fetching and carrying, and even sweeping and scrubbing for her, though before

setting to work on the floor, he would bar the door to prevent the neighbours seeing him engaged on what was considered an unmanly occupation!

When he grew older he was able, by working hard in the factory in summer, to earn enough money to keep him in winter in Glasgow, where he attended classes in the University. In 1840, having taken his degree as a doctor, he was sent out to South Africa as a medical missionary by the London Missionary Society.

The first eleven years of his life in Africa were spent in missionary work in Bechuanaland, a country on the north of the Orange River, and west of the Transvaal, which had been almost unknown to white men until, about twenty years before, another Scotsman, Robert Moffat, had planted a missionary station there. A daughter of Moffat's became Livingstone's wife, and accompanied him to the new station which he had planted two hundred miles north of her father's. Livingstone has described the life which he and his wife led in the new station, he "building, gardening, cobbling, doctoring, carpentering, . . . preaching, schooling", while his wife "made candles, soap, and clothes", and taught classes of the native children.

At length a terrible drought, which occurred in the district where he had settled, made him

resolve to send his wife and children home to England, while he himself, accompanied only by some faithful black followers, set out on a journey of exploration to the north-west. His skill as a doctor, his calm strength and courage, and his honesty and kindliness in dealing with the natives, soon spread his fame far and wide, and enabled him to pass unharmed through countries where no white man had ever been before.

He had set his heart on finding a way from the heart of the country to the west coast; and in spite of difficulties and dangers of every sort —scorching heat, pathless jungles, savage men and savage beasts, fever, lack of food at times, and even mutiny among his followers — he succeeded. In May, 1854, he reached Loanda, the Portuguese settlement on the west coast; and his black followers looked for the first time on the sea with awe and amazement. Their own account of their first sight of the sea is interesting. "We were marching along with our father," they said afterwards, "believing what the ancients had told us, that the world had no end; but all at once the world said to us, 'I am finished; there is no more of me'."

In finding a way from Central Africa to the coast, Livingstone had done what no white had done before, and he was utterly broken down

in health from the hardships he had gone through; but he could not be induced to give up his work in Africa. After a few months' rest at Loanda, to recover from a severe attack of dysentery, he once more set out on his travels.

Livingstone's Last Journeys—his Death

Having reached the west coast of Africa from the interior, Livingstone now resolved to pass right across the continent to the east coast. It was a great undertaking for a single white man, with no help save what was given him by friendly native chiefs, and with health already broken with all he had gone through; but, as he had said, he was resolved to find a path from the coast to the interior, or to perish in the attempt.

On his return to Linyanti, the place in the interior from which he had started on his journey to the west coast, less than two years after leaving it, he and his followers were received by the native inhabitants with the wildest joy. They looked on the returned travellers as men risen from the dead, for they had never thought they would reach the sea. The chief was most kind and friendly to Livingstone, and gave him an escort of one hundred and twenty men and a large store of provisions, to enable him to

carry out his purpose of finding a way to the east coast.

The first part of the journey eastward, after leaving Linyanti, lay along the banks of the great Zambesi river, which pours into the Indian Ocean on the east coast of the continent. Though there are Portuguese settlements about the mouth of the river, Livingstone believed he was the first European who had ever seen it in the heart of the country. When he reached the great falls on the river, he named them, in honour of the queen of his country, the Victoria Falls.

In little more than six months after leaving Linyanti he reached the east coast, after passing through dangers and difficulties of every sort. He had now passed right across the continent, and had gained information about the geography of the country, the nature of the plants and animals, and the character and habits of the people, which was of the greatest use to mankind. When he returned to Britain for a much-needed rest and holiday, he was welcomed by his proud and grateful country with every mark of honour.

Even in his native country he was not idle, but occupied himself in writing an account of his travels, which brought him a large sum of money, much of which he afterwards used in

carrying out his explorations in Africa, where he returned in 1858. This time he did not go as a missionary, but as a consul, employed by the government of Great Britain, and at the head of a regular expedition, including some scientific men. His wife, from whom he had been parted for five years, also returned with him to Africa, where she died of fever a few years later.

For the remainder of his life Livingstone's explorations were confined to the east part of Central Africa to the north of the Zambesi river. There he discovered Lake Nyassa and explored Lake Tanganyika—both situated high above sea-level, in a beautiful and healthy country, which has since become the chief centre of missionary enterprise in Africa. British steamers are now plying on the lakes, the very existence of which was unknown to white men fifty years ago.

One more visit Livingstone paid to his native country in 1864, returning to Africa the following year. His object now was to find, if possible, the source of the river Nile, which he believed rose in the neighbourhood of the great lakes. This object he never accomplished, although he spent some seven years in the search — years mostly of sickness, and suffering, and disappointment. He was no longer young, and his health was completely broken down with all the hardships he had endured. Nevertheless he would

not give up the work which he believed he had yet to do. Even when, in 1871, a relief party, headed by the American, Stanley, reached him, he could not be induced to leave Africa.

Two years later, one morning in April, 1873, he was found kneeling by his bed in his hut, dead. Though the place where he died was far from the region known to civilized men, his black followers bore the body of their master over the long miles of country to the coast. Thence it was shipped to England, to be laid with all honour in Westminster Abbey.

Thomas Carlyle and his Influence on the Thought of his Country

We have already seen that, during some years of their lives, the greatest poet and the greatest novelist of Scotland were living at the same time. It is interesting to note that a third Scottish writer, no less great in his own department than those two, was born while they were both alive. This was Thomas Carlyle, whose birth took place in 1795—the year before the death of Burns — in the village of Ecclefechan, in Dumfriesshire, where his father carried on the calling of a stone-mason.

Though poor, Carlyle's father, like the father of Burns, was anxious to give his sons a good

education; and he managed to support Thomas first at Annan, where for three years he attended the Academy, and afterwards at Edinburgh, where he studied in the classes of the University.

On leaving the University (in 1814), Carlyle was for two years mathematical master in Annan Academy, and afterwards at Kirkcaldy. At Kirkcaldy he formed a warm friendship with Edward Irving, who later became famous as a preacher, and the founder of a religious sect, known as "Irvingites". The life of a schoolmaster, however, was not to Carlyle's taste; neither was that of a minister, though his father had hoped he would enter the Church. He was born to be a writer of books; and to this work he longed to devote himself.

In 1818 he left Kirkcaldy and took up his abode in poor lodgings in Edinburgh, where he spent the four hardest years of his life, earning a bare livelihood by private teaching, or by writing occasional articles for an encyclopædia. At this time, and for some years afterwards, he devoted a great deal of time to the study of the great writers of Germany, who were but little known in England; and his first published books were translations from the German.

His first great work, *Sartor Resartus*, was written in 1830. He was then living with his wife (whom he had married four years before)

at Craigenputtock, a small property belonging to her, situated about sixteen miles from Dumfries, "in a wilderness of heath and rock"—"the loneliest nook in Great Britain", as he called it. Mrs. Carlyle (who was herself not without literary talent, as is shown by her letters, published after her death), on reading *Sartor*, declared it to be "a work of genius", and this opinion has since been confirmed by all those best able to judge. Yet it was long before any publisher would undertake to print it; and it was not till after Carlyle's *History of the French Revolution* appeared, in 1837, that *Sartor* became known and appreciated.

As soon as the *French Revolution* was published, its author became famous. It dealt with a subject which was full of interest at the time, and it was written as no history had ever been written before. It was no dull statement of dry facts, but a drama, full of life and movement and vivid interest. Before the *French Revolution* appeared, Carlyle and his wife had left Craigenputtock and taken a house in Chelsea, a district of London, from his long residence in which he has sometimes been called the "sage of Chelsea". There his *Heroes and Hero-worship*, his *Life of Frederick the Great*, and his *Life of Cromwell* were written; and there, in 1881, he died.

No writer ever exercised a stronger influence

than Carlyle on thinking young men, not only in his own country, but all over the world. The thoughts which he expressed in language so strikingly new and vivid seemed to them like the utterance of all that was deepest and noblest in their own natures. The lessons which he taught them were good and wholesome. He taught them to despise Sham; and by sham he meant all that is only *external*—such things as riches, and rank, and worldly honours; to believe in the existence of Truth, and never to weary in the search after it. He bade them always reverence the Hero—the man, whether king or peasant, who does a hard task nobly. He showed them the dignity of honest toil, the cowardliness of "whining" because one's lot in life is not all that one would like, and the need of being ready to "renounce" —to give up one's will to the will of God. He commanded them, when in any doubt or difficulty, "*Do the duty which lies nearest you*".

CHAPTER XIV

CONCLUSION

Recent Social and Industrial Progress of Scotland

We have now traced the social and industrial development of Scotland from the beginning of the eighteenth century to the borders of the present time. We have marked, step by step, the opening up of an almost unknown and inaccessible "land of brown heath and shaggy wood" by canals, and bridges, and roads, and railways. We have seen miles of pathless barren moor and bog give place gradually to rich fields of corn, and plantations of stalwart, sheltering trees; and flocks and herds fattening in meadows where once a few skeleton sheep and cattle starved on nettles and thistles. We have watched the gradual awaking of energy and enterprise in a people sunk in sloth and apathy, and seen Scotsmen pushing their way to the front in every department of human activity. We have learned something of the rise and growth of commerce and manufactures in Scotland, and of the many great men in almost every department whom the

country produced during the latter part of the eighteenth, and first half of the nineteenth, century —of Burns and Raeburn and Scott and Carlyle and Chalmers, of Watt and Rennie and Telford and Livingstone.

We have now only to notice briefly some of the events and undertakings which mark the progress of Scotland, during the last thirty or more years, in educational reform, charitable enterprise, and the carrying out of great public works.

Free Education and the School Board

In an earlier chapter we saw something of the difficulties and hardships which school children had to contend with two hundred years ago—especially those who lived in remote parts of the country. Yet Scotland has every reason to be proud of her old Parish School system, and of the work which it accomplished. It brought education within the reach of the children of almost the poorest centuries before any system of public education existed in England.

As the population of the country, and especially of the large towns, increased, however, the parish schools were not found sufficient to supply the needs of the rising generation, and it became necessary to find other means to support the burden of public education. From about 1832

onwards grants of money were given by the Government in aid of the public schools in Scotland; and in 1872 Parliament passed the Education Act, by which the whole Parish School system was done away with.

Since that time it is the State which has taken charge of the education of the children of Scotland. In every district of the country, wherever a certain number of children can be gathered together, a comfortable school-house has been built, and a number of people, known as the School Board, has been chosen by the votes of the ratepayers to see that the terms of the Education Acts are carried out in that district. The two most important results of the various Acts passed by Parliament with regard to education are that education is now *free to all*, and that parents are compelled to send their children over a certain age to be educated, the necessary money being provided by the State and the ratepayers.

Free Libraries

In an earlier chapter we have seen how, towards the end of the eighteenth century, the wealth of Scotland was increased by the return to their own country of Scotsmen who had made their fortunes in the colonies. Of recent years a Scotsman, Andrew Carnegie, has devoted a large portion

of his enormous wealth, amassed in America, to the founding of free libraries in various towns of Scotland—and these, if perhaps the most luxurious, and richly endowed, are by no means *the first* institutions of the kind founded in the country. In a street in Edinburgh opening off the High Street, where Allan Ramsay started his modest lending library not yet two hundred years ago, there stands to-day a handsome stone building, with the words "Let there be light" carved over the door. Within it are wide stone corridors, broad flights of steps, a large hall crowded from floor to ceiling with thousands of volumes, and a reading-room with comfortable seats, and desks, and tables, books of reference of every kind, and the latest journals and magazines. One cannot help picturing the amazement of the good poet could he see all this, and hear that rooms, and books, and seats, and tables were free for all, even the poorest, to use!

Modern Triumphs of Engineering

Scarcely less than the wonder of Allan Ramsay at the sight of one of our modern free libraries, would be the surprise and admiration of John Rennie could he see some of our recent great engineering works. Among the most remarkable are the works, opened in 1859, by which water

is brought to supply Glasgow from distant Loch Katrine, across rivers and valleys, through miles of tunnels, and great iron pipes.

The bridges over the Firths of Tay and Forth are also among the great engineering feats of modern times. The latter, which was opened by King Edward VII (then the Prince of Wales) in 1890, is one of the longest and largest iron bridges in the world, being over a mile in length. It is regarded as a modern marvel, and people come from far to see it.

Modern Scottish Scientific Enterprise—The "Scotia" Expedition

One of the most recent, and perhaps most striking, proofs that Scotland is taking an active part in the work of the world is afforded by the fact that, within the last few years, she equipped and sent out, for the first time in her history, an expedition to explore the icy regions in the neighbourhood of the South Pole. The party of explorers, led by a Scotsman (Mr. W. S. Bruce), set sail from Scottish waters late in the year 1902 in a ship (the *Scotia*) built and equipped with Scottish money, and commanded by a Scottish captain. In less than two years they returned to their own country, after having made discoveries of considerable importance to science.

Among the crowds assembled to welcome home the travellers, as they set foot on their native land, there was perhaps not one Scotsman or Scotswoman whose heart did not thrill at the thought that the enterprise which they were there to celebrate was purely Scottish.

Modern Scottish Art—The "Glasgow School"

During more than a hundred and fifty years Scottish troops have borne their share in the foreign wars of Great Britain, and Scottish hearts have swelled with pride at the brave deeds of their fellow-countrymen at Waterloo, in the Crimea, in Egypt, and South Africa.

As the poet says, however, "peace hath her victories no less renowned than war"; and perhaps it is not in war, but in the studio of the artist, that the greatest glory has been won for Scotland during the last quarter of a century. Nothing is more remarkable in the history of the country during that period than the rise of a great school of painters amid the smoke and din and bustle of the largest and busiest town of Scotland.

During the three-quarters of a century since Raeburn's death, art has made great progress in the country. No painter greater than Raeburn,

or perhaps as great as he, has arisen during the period; but there has been a succession of Scottish artists of a high class, beginning with Sir David Wilkie, who was almost the contemporary of Raeburn, and including such names as Phillips, Orchardson, Pettie, Nicol, Faed, Paton, Reid, and Guthrie. Besides this, a Scottish Academy of Art has been founded; a taste for art has spread among the people of the country; opportunities for studying it have been increasing year by year; and of late the "Glasgow School" has raised the standard of Scottish art to a high level. The school consists of a number of artists connected with Glasgow. These artists have introduced a new style in painting; and their works have not only raised them to the first rank among British painters, but have earned fame for them, and for their country, all over the world.

Since 1707, when the Act was passed which united two countries long at war with each other, old landmarks have been gradually disappearing, till England and Scotland have almost ceased to exist as separate countries. If, however, our glance at the history of Scotland during the last two centuries has taught us nothing else, it has at least shown us that, in becoming a part of Great Britain, she has lost none of her native vigour, and energy, and genius.

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